Bournemouth Gua

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PROCEEDINGS
OF THE
Bournemouth Natural Science Society

VOL. XLI

SESSION 1950-51

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PROCEEDINGS of the

Bournemouth Natural Science Society

BRITISH MUSEUM NATURAL HISTORY

VOL. XLI.

SESSION 1950-51

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Introductory Note

The objects of the Society are declared in the second of its Rules to be "the promotion of the study of Science in all its branches, and of Public Education, by means of Lectures, Field Meetings, the reading and discussion of Papers, and in any way that the Council of the Society shall deem advisable."

The branches of Science at present represented are as follows:—**Archæological and Historical, Astronomical, Botanical, Entomological, Geographical, Geological, Microscopical, Photographic, Physical and Chemical, and Zoological.**

During the **Winter Session,** from October to April, frequent meetings are held, comprising Lectures on subjects of scientific interest, illustrated by lantern slides, films, epidiascope, diagrams, specimens, and experiments.

Throughout the **Summer Session,** Field Meetings are held in suitable places in the neighbourhood of the town, or Coach Tours are arranged to districts of scientific interest at a distance.

The management of the Society is vested in a Council, which is elected at the Annual General Meeting.

The Society possesses a Library available for the use of members. Books may be borrowed by members, and there is a Reading Room in which works of reference may be consulted. The Museum contains many valuable scientific collections and specimens. There is a well-equipped Dark Room for the use of members interested in Photography.

Members are elected by the Council, and pay an annual subscription of £1 10s. 0d. for full membership, or £15 for Life Membership. An Entrance Fee of 5/- is payable upon nomination for election. The Family Subscription (for members of a family living in the same house) is as follows:—First Adult Member, £1 10s. 0d.; Second Adult Member, £1; each additional Adult Member, 10/-; Children between 12 and 18 years, 10/- (Associate Members). Members living six miles or more from the Square pay half the above rates. Renewable monthly membership, 5/-, is available.

A bi-monthly Programme, giving full details of all meetings, is posted to every member, and a Volume of Proceedings is published annually of which adult members receive a copy.

Application Forms for Membership, and further particulars may be obtained from the Honorary Assistant Secretary,

Miss D. M. LOWTHER, B.Sc.,
Lonsdale, Mayfield Avenue,
Parkstone, Dorset.
(Tel. Parkstone 1219)

Bournemouth Natural Science Society

OFFICERS AND COUNCIL FOR 1951-52.

N.B.—University and other qualifications are only attached at first mention of names.

President

Ernest Chambers, F.L.S.

Chairman of Council

H. E. Clarke, M.A., B.SC., F.R.I.C.

Deputy Chairman of Council

W. J. Read, M.SC., F.R.I.C.

Council

The Officers and Chairmen of Sections (*ex-officio*).

Miss E. Banham
Mrs. E. Brimicombe
Henry Bury, M.A., F.G.S., F.L.S.
Emer. Prof. John Cameron, M.D., D.SC.
Major C. L. Cooper-Hunt, M.A., PS.D.
B. Gorton, M.R.C.V.S.
E. C. Green, B.A., F.L.S.
H. W. Leonard
H. C. Mayo
F. Ogden
H. G. Sadler
Miss I. E. Sheffield
W. G. Smith
H. K. Stanton
Mrs. W. Boyd Watt, F.Z.S., M.B.O.U.

Chairmen of Sections

Archæological and Historical : F. Williamson, F.R.HIST.S.
Astronomical : W. P. Winter, B.SC.
Botanical : E. Chambers.
Entomological : W. S. I. Cox.
Geographical : H. de Castro.
Geological : D. A. Wray, M.SC., PH.D.
Microscopical : J. H. Murgatroyd, F.L.S., F.Z.S., F.R.E.S.
Photographic : A. W. Legat, M.INST.C.E.
Physical and Chemical : H. E. Clarke.
Zoological :

Hon. Treasurer

W. J. Woodhouse, A.C.P.,
29, Twynham Road, Southbourne (Tel. : Southbourne 1199).

Secretaries

Hon. Secretary : W. S. Brown, B.SC.
Hon. Assistant Secretary : Miss D. M. Lowther, B.SC.
Hon. Assist. Secretary (Programmes) : H. W. Leonard.

Hon. Librarian

A. A. Foyle.

Hon. Curator

F. Williamson.

Hon. Editor

F. Coleman, M.C., M.R.C.S., L.R.C.P.

Hon Auditors

F. Williamson, A. A. Foyle.

Hon. Solicitor

G. A. Turner.

Bankers

National Provincial Bank of England, Bournemouth.

COMMITTEES, 1951-52.

Finance and General Purposes:

Chairman : H. E. CLARKE.

Hon. Treasurer : W. J. WOODHOUSE. *Hon. Secretary* : W. S. BROWN.

H. BURY, J. CAMERON, E. CHAMBERS, F. OGDEN, W. J. READ, S. WHITAKER.

Library:

Chairman : F. WILLIAMSON.

A. A. FOYLE, W. E. BROWN, H. E. CLARKE, MRS. W. PERCEVAL, W. J. READ, H. G. SADLER.

Museum:

Chairman : F. WILLIAMSON.

E. CHAMBERS, H. E. CLARKE, W. S. I. COX, H. DE CASTRO, A. W. LEGAT, J. H. MURGATROYD, MRS. W. BOYD WATT, W. P. WINTER, D. A. WRAY.

Editorial:

Chairman : F. COLEMAN.

Hon. Treasurer : W. J. WOODHOUSE. *Hon. Secretary* : W. S. BROWN.

H. BURY, E. CHAMBERS, H. E. CLARKE, W. J. READ.

Garden:

Chairman : H. G. SADLER.

MISS E. BANHAM, MRS. W. CHOMÉ, F. COLEMAN, H. W. LEONARD, MRS. N. LEONARD, ST. J. K. NORTH-ROW, MISS E. WHITAKER.

Entertainment:

Chairman : E. CHAMBERS.

H. E. CLARKE, H. G. SADLER, MISS I. SHEFFIELD, F. WILLIAMSON.

Bournemouth Natural Science Society

List of Members.

(Revised to December 5th, 1951)

* Honorary Member. † Past President.
o Original Member. L Life Member.
A Associate Member.

The year of election is given before the name of each member.

1951	Abley, Miss M.	Portreath, Merly, Wimborne
1947	Alabaster, Sir G., Kt., O.B.E., K.C.	34, Pinecliffe Avenue, Southbourne
1947	Alcock, J. W.	24a, Ovington Avenue, Iford
1948	Alcock, Mrs. A.	,, ,, ,,
1948	Alcock, Miss J.	,, ,, ,,
1948	Alcock, Miss M.	,, ,, ,,
1946	Allan, Miss M. W.	6 St. Alban's Crescent
1951	Angus-Hay, Mrs. L. E.	9 Windermere Road
1943	Appleton, Miss M.	8 Cavendish Place
1950	Armfield, Mrs. G. M.	Oak Tree House, Hightown, Ringwood
1951	Atkin, Miss M. G., M.CH.S.	Lindale, 64 Wimborne Road
1948	Austin, Mrs. G.	Flat 7, The Cottage, Rothwell Dene, Milner Road
1950	Bailey, J. H.	39 Strouden Avenue
1950	Bailey, Mrs. A.	,,
1951	Bailey, Miss A. R.	Cressex Lodge, Binfield, Bracknell, Berks
1950	Bain, Miss E. M.	15 Clarendon Road, Bournemouth West
1947	Ball, Miss W.	27 Heatherlea Road, Southbourne
1936	Banham, Miss E.	Newton Morell, Munster Road, Parkstone
1951	Barker, W., B.SC.	Tide Brook, Upton Road, Poole
1951	Barker, Mrs. E.	,, ,,
1912	A Barraclough, A., M.A., F.R.G.S.	93 East Avenue
1951	Barrough, W.	Macomb Croft, 9 Florence Road, Boscombe
1939	Bates, T. W.	36 Talbot Avenue
1939	Bates, Mrs. F.	,,
1949	Beale, J. M., M.A.	44 Glenferness Avenue
1949	Beale, Mrs. M.	,, ,,
1951	A Beasley, D. J.	5 Leeson Road, Queen's Park
1944	Bell, T. M., B.A., M.B., B.CH., M.R.C.S., L.R.C.P.	255 Belle Vue Road, Southbourne
1941	Bell, Mrs. R. M.	,, ,, ,,
1945	Bell, M. N.	,, ,, ,,
1945	Bell, R. J.	,, ,, ,,
1942	Bennett, Miss D.	Martello Firs, Martello Road, Branksome Park
1942	Bennett, Miss M.	,, ,,
1920	Bennett, Risdon, M.A.	Yew Tree Cottage, Broadstone
1950	Benwell, Miss P.	2 Woodland Way, Bearway
1947	Berrill, Miss M. E.	Heathlands Hotel, Grove Road
1942	Bickel, T. H.	Flat 1, 31 Marlborough Road
1947	Binks, Miss I.	9 Florence Road
1951	Black, Mrs. E.	69 Grosvenor Street, London, W.1
1946	Blackmore, H. C., L.D.S., R.C.S.	7 Browning Avenue, Boscombe

1948	Blake, Mrs. N. D.	Wimbledon Hall Hotel, Bournemouth
1950	Bland, R.	Kingston, Central Avenue, Corfe Mullen
1950	Bland, Mrs. S.	,, ,, ,,
1950	Blatchford, Surg.-Com. W. N., R.N.	Cottonwood Hotel, Grove Road
1942	Boardman, E.	The Datcha, Compton Drive, Parkstone
1950	Bone, Miss M. R. M.	6 Groveley Road
1944	Borrett, A. C.	12 Montague Road, W. Southbourne
1944	Borrett, Mrs. L.	,, ,,
1938	Bottomley, Dr. F. C.	1 Beechwood Avenue, Boscombe
1947	Bowkett, Miss N.	54 Westby Road, Boscombe
1951	Bracken, Mrs. A.	Hotel Belvedere, Christchurch Road
1948	Brett, Mrs. A.	58 Wellington Road
1942	Brimicombe, Mrs. E.	32 Ken Road, Southbourne
1926	*Broad, F., F.S.I.	Manton Villa, 2 Oxford Road
1921	Bromley, Miss	81 Lansdowne Road
1937	Brown, S. C. S., L.D.S., R.C.S., H.D.D.	454 Christchurch Road, Boscombe
1950	ABrown, C.	,, ,, ,,
1951	Brown, C. E.	142, Richmond Park Road
1951	ABrown, D. C.	,, ,,
1948	Brown, W. S., B.SC.	Three Ways, Dudsbury, Wimborne
1920	Brumell, Miss M.	7 Windermere Road
1946	Brummitt, Miss G.	Elderly Nurses' Home, Holdenhurst
1951	Bull, A. W. M.	Broom House, Chiltern Road, Hitchin
1929	Burge, J. T., F.R.A.S.	6 Westdown Road, Kinson
1937	Burrow, Mrs. D. M., PH.D., B.SC.	107 Alumhurst Road
1922	Burton, E. St. J., F.G.S., F.R.S.A.	St. Anne's, Seaward Avenue, Barton-on-Sea
1922*†	Bury, Henry, M.A., F.L.S., F.G.S.	The Gate House, 17 Alumdale Road
1930	Bury, Miss G. J.	,, ,, ,,
1946	Busby, Miss G.	4 Harbour Close, West Road, Canford Cliffs
1945	Butler, G. W.	Old Park Farm, Lytchett Matravers
1947	Butterworth, J. F.	2 Forest Road, Branksome Park
1948	Butterworth, E. P.	,, ,,
1928	LCalkin, J. B., M.A., F.S.A.	Virginia House, Langton Matravers
1950	Calladine, Miss D.	23 William Road, Queen's Park
1934	†Cameron, J., M.D., D.SC.	63 Grove Road
1951	Campion, Miss A.	11 New Park Road, Southbourne
1946	Carron, Mrs. M.	11 Eaton Road, Bournemouth W.
1939*†	Carpenter, Prof. G. D. Hale, M.B.E., D.M., F.L.S., F.Z.S.	Penguelle, Cumnor Hill, Oxford
1949	Carter, Miss E., M.A.	20 Marlborough Road
1945	Carver, R. B.	24 Huntley Road
1950	Cashmore, Group-Capt. E. M.	Windrush, Whitehouse Hill, Wimborne
1950	Cashmore, Mrs. A.	,, ,, ,,
1944	LChambers, Ernest, F.L.S.	39a Queen's Park South Drive
1950	Chambers, Mrs.	,, ,,
1948	Chambers, Miss V.	29 Watcombe Road, Southbourne
1946	Chaplin, W. A.	11 Folkestone Road, Harnham, Salisbury
1949	Chapman, A. F.	Belvedere, Kingland Crescent, Poole
1950	Charlesworth, Miss A.	1 The Cottages, Wick Green, Bournemouth
1945	Cheesman, Mrs. A.	The Ken, Walkford, Christchurch
1945	Child, Miss L. M.	Norfolk Lodge Hotel, Canford Cliffs
1912	Chilver, Miss K. M.	2 Shaftesbury Road
1951	Chomé, E. E. P.	14 Portchester Road
1942	Chomé, Mrs. W.	,, ,,
1943	Chomé, Miss E.	,, ,,
1943	Chomé Miss M.	,, ,,

1950	Churches, Mrs. E. W., M.B., CH.B.	The White House, Colebrook Street, Winchester
1931	Clark, Miss K. E.	15a St. Mary's Road
1945	Clarke, H. E., M.A., B.SC., F.R.I.C.	64b Surrey Road
1945	Clarke, Mrs. M.	”
1927	*Clay, R. C. C., M.D., F.S.A.	The Manor House, Fovant, Wilts
1950	Clifford, Miss E. E.	14 Stourcliffe Avenue, Bournemouth
1951	Coe, Mrs. G.	3 Dunbar Road
1946	Cohen, E., F.Z.S., M.B.O.U.	Hazelhurst, Sway
1951	Coleman, F., M.C. M.R.C.S L.R.C.P.	Ellerslie Hotel, Hinton Road
1941	Coltar, Miss S. A.	98 The Grove, Redhill Park, Moordown
1926	Cooper, H. A.	White Lodge, 8 Oban Road
1941	Cooper, Mrs. E. M.	” ”
1951	LCooper, Miss R. I.	” ”
1945	Cooper-Hunt, Major C. L., M.A., PS.D., MS.D., D.D.	19 Marine Drive East, Barton-on-Sea
1945	Cooper-Hunt, Mrs. E.	” ”
1950	Cornish, Mrs. R.	37 Belvedere Road
1951	Courtney, F. E.	Municipal College of Art, Bournemouth
1951	ACox, N. R.	3 St. Paul's Road
1948	Cox, W. S. I., F.R.E.S.	248 Castle Lane
1948	Cox, Mrs.	” ”
1922	Crallan, Mrs.	Lansdowne Hotel, Eastbourne
1948	Crawshaw, J. C., A.R.C.A.	Latchmoor, Mudeford, Christchurch
1949	Crawshaw, Mrs.	” ”
1941	Cresswell, Mrs. S. M.	13 Cecil Court, Charminster Road
1950	Croom, H. E.	St. Mawes, 4 Glendale Road
1950	Croom, Mrs. J.	” ”
1951	Crowe, Mrs. M. L.	Marden, 13 Beatty Road, Charminster Hill
1950	Cundall, H. L.	105 Hennings Park Road, Poole
1950	Cundall, Mrs. M.	” ”
1931	Curgennon, Miss A. J.	Cavendish Nursing Home, 51 Braidley Road
1903	*oCurtis, W. Parkinson, F.E.S.	Ladywell Cottage, Tower Road, Branksome Park
1947	d'Aguilar, Lt.-Col. C. B.	Pavilion Hotel, Bath Road
1941	Dailey, Miss K.	134 Western Avenue, Ensbury Park
1951	Dane, A., B.Sc.	64 R. L. Stevenson Avenue, Bournemouth W.
1946	Darby, Mrs. M.	5 Stokewood Road
1951	Davenport, F. R.	"Cintra," Budleigh Salterton, Devon
1950	Davidson, Miss M. S., M.A., B.SC.	Bournemouth School for Girls, Gervis Road
1951	Davis, Miss G. H.	Moorlands, The Grove, Ferndown
1949	Day, J.	60 Brackendale Road
1930	de Castro, H.	Yarlington, Springdale Avenue, Broadstone
1945	de Jersey, Mrs. D.	98 Pauntley Road, Mudeford, Christchurch
1951	Dennis, Rev. N.	The Presbytery, Albert Road
1935	Derry, Mrs. E. H.	Charnwood, Belle Vue Road, Southbourne
1947	Dewdney, H. A., F.R.C.O., L.R.A.M.	15 Wellington Road
1950	Dixey, Mrs. A. D.	16 Southern Road, West Southbourne
1949	Dixon, Miss H.	62 Christchurch Road
1943	Dodd, Mrs. R.	140 Richmond Park Road
1950	Down, E. A., F.R.I.C.S., F.F.A.S., M.INST.R.A.	47 Boscombe Overcliff Drive
1950	Down, Mrs. Dorothy I. A.	” ”
1950	Down, Peter A.	” ”

1950	Down, Miss Rosemary J.	47 Boscombe Overcliff Drive
1950A	Down, Miss Daphne V.	,, ,,
1950	Downe, R. F. H.	67 Portchester Road
1949	Drayton, Miss A. W.	7 Watkin Road, Boscombe
1946	Drew, Lt.-Col. C. D., D.S.O., F.S.A.	Dorset County Museum, Dorchester
1950	Dunn, Addison H.	Baycroft, Central Avenue, Corfe Mullen, Wimborne
1950	Dunn, Mrs. B. R.	,, ,, ,,
1950A	Dunn, Miss P. L.	,, ,, ,,
1951	Dunton, Miss W. M.	Lyndhurst, East Green, Southwold, Suffolk
1936	Edwards, Charles, M.D.	Lyndon Lodge, 51b Christchurch Road
1936	Edwards, Mrs. H.	,, ,, ,,
1946	Ellison, Prof. F. O'B., M.D., F.R.A.S.	Pine Apple Cottage, Burton
1951	Elmes, J. P., B.A.	23, Cassel Avenue, Bournemouth W.
1950	Evans, Mrs. E. E. M., B.A.	113 Western Avenue, Ensbury Park
1951	Farish, Mrs. J. J.	42 London Lane, Bromley, Kent
1919	Farmar, Mrs. K. A.	Whitton Lodge, Stevenson Crescent, Parkstone
1922	Farmar, Miss E. A.	,, ,, ,, ,,
1934	Finnis, Miss F. M.	15 Julian's Road, Wimborne
1951	Firth, Miss M. L.	Balincourt Hotel, 58 Christchurch Road
1950	Fisher, Miss N. K.	3a Alumhurst Road, Bournemouth W.
1947	Fithian, A. W.	Ewelme, Frankland Crescent, Parkstone
1950	Fitzroy-Steer, Mrs. G. P., M.R.S.T.	Saxonhurst, Wimborne Road, Northbourne
1947	Fletcher, Capt. G.	14 St. Augustine's Road
1950	Fletcher, Mrs. V.	,, ,,
1942	Ford, Miss C.	13 Beaufort Road, W. Southbourne
1938	Ford, J. C.	3 Harvey Road, Boscombe
1937	Forrest, Miss C. D.	Hiproof, Benellen Road
1925	Fountain, E. D., L.R.C.P., M.R.C.S.	Vron, 30 Mansfield Road, Parkstone
1945	Foyle, A. A.	24 R. L. Stevenson Avenue
1948	Francis, Miss E.	Flat 3, Wilton House, Alum Chine Road
1949	Francis, Miss E., B.A.	Thrupp Lane, Stroud
1945	Fraser, Miss L., M.B.E.,M.D.,B.S.	Bourne Hall Hotel
1951	Gamble, Mrs. G.	10 College Street, London, W.6
1950	Geer, Miss M. L.	Grove House Private Hotel, Wollstonecraft Road, Boscombe
1951	Goddard, Miss E. F.	Allendale, 215 Holdenhurst Road
1947	Gompel, Mrs. M.	12 Chigwell Road
1949	Goodhart, Mrs. M.	West Thorpe, Lymington
1942	Gorringe, Miss K.	11 Branksome Dene Road, Westbourne
1927	Gorton, B., M.R.C.V.S.	22 Arnewood Road, West Southbourne
1951	Gourlay, W. B.	7 Millington Road, Cambridge
1950	Graham, Miss S. F., B.SC.	Bournemouth School for Girls, Gervis Road
1948	Grant, Col. T. H.	B35, San Remo Towers, Boscombe
1948	Grant, Mrs. F.	,, ,, ,,
1951	Grantham, Miss W. A.	13 Grosvenor Road
1950	Green, E. C., B.A., F.L.S.	19 St. Stephen's Road
1947	Green, Miss F. W., M.A.O.T.	16 Warnford Road, Boscombe E.
1944	Greg, Mrs. F.	9 Hengist Road, Boscombe
1951	Gregory, Sir R., Bart., D.SC., F.R.S.	The Manor House, Middleton-on-Sea, Nr. Bognor Regis
1948	Griffin, J., M.A.	20 St. Ledger's Road
1948	Griffin, J. A.	,, ,,

1951	Griffiths, Miss D.	15 Wimborne Road
1951	Griffiths, Miss V. M.	,, ,,
1941	Gwyther, W. T.	12 Foxholes Road, Southbourne
1931	Haines, Mrs. E. M.	Appleslade, Ringwood, Hants
1951	Haines, Miss M. H.	,, ,,
1951	Haines, Miss M. R.	,, ,,
1929	LHaines, G. E.	
1950	Hammond, Mrs. M. J.	36 Huntley Road
1951	Hanbury, Miss O. T.	Moorlands, The Grove, Ferndown
1951	Hardcastle, Miss M. F.	Beaumont Court Hotel
1945	Harding, Mrs. L.	85b, Southbourne Grove
1948	Harding, W. G.	,, ,,
1951	Harding, R.	3 Portchester Road
1951	Harlock, Miss M. L.	44 Heather View Road, Branksome
1932	*Hatton, Mrs.	Dutch House, Cliff Road, Barton-on-Sea
1920	Hawes, Miss	The Moorings, 27 Nelson Road
1951	Hawker, Mrs. E.	15 Burnaby Road, Bournemouth W.
1949	Hayley, Miss V. G.	Sandykeld Hall, Manor Road
1951	Hayman, Mrs. M. S.	38 Queen's Park South Drive
1950	Heathcote, Mrs. N. K.	The Gateway, Wilderton Road
1951	Heap, W.	Horseshoe House, Swanage, Dorset
1951	Heaven, W. A. R.	Grey Lodge, Southbourne Road
1951	Heaven, Mrs. E. M.	,, ,,
1951	Henderson, J. G.	Tower House, Westcliff Gardens
1928	Henderson, R. G., M.A., M.B., CH.B. (Aber.), F.R.C.S. (Edin.)	87a Southbourne Road
1951	Henley, Miss E.	2 Audley Square, S. Audley Street, London, W.1
1951	Hewer, Mrs. K. B.	Sandykeld Hall Hotel, Manor Road
1951	Hewitt, Mrs. A. J.	Melbray, Canford Cliffs Avenue, Parkstone
1951	AHewitt, Miss J.	,, ,,
1944	Hill, Mrs. G.	Wootton, Cliff Drive, Canford Cliffs
1946	Hilton-Johnson, Miss C.	12 Oban Road
1948	Hodgson, W. H.	3 Coy Pond Road
1950	Hook, Oliver, F.Z.S.	Brackenridge, Sway Road, Brockenhurst
1951	Hughes, T. C., M.A., F.S.A.	Oakrigg, Scotsforth, Lancaster
1951	Humble, Mrs. A.	Flat 5, 4 Manor Road
1930	Hurt, Miss C. E. C. J.	Flat 31, Ingleby, 6 Wimborne Road
1950	Ingleton, Mrs. E. E.	66 Seaward Avenue
1950	Isaacs, G. H., B.A.	Southmead, 4 Mountbatten Road
1950	Isaacs, Mrs. I. F.	,, ,,
1940	Jackson, Miss E. M., B.A.	Kilmory, York Road, Broadstone
1948	Jackson, J. O.	44 Herberton Road, W. Southbourne
1943	Jaggers, Mrs. E.	15 Elmsway, Southbourne
1942	James, Mrs. E.	Cranmere, Hatherden Avenue, Parkstone
1933	James, Mrs. M. G.	70 St. Alban's Avenue
1947	Jaques, Miss M.	Croft Cottage, Forest Road
1945	Jenkins, Miss P.	Hinton St. Michael, Christchurch
1951	Jenkins, Miss S.	58 Wellington Road
1950	Jennings, R. J.	Latymer, 99 Seafield Road, Southbourne
1950	Jennings, Mrs. G. M.	,, ,, ,,
1950	Jessop, Miss B. M.	27 Southwood Avenue, West Southbourne
1930	Jones, Miss A. Parnell	Yealand, Kings Drive, Pagham, Bognor Regis, Sussex
1950	Jones, Miss M., B.SC.	Bournemouth School for Girls, Gervis Road
1945	Jones, S. W., C.M.G.	6 Boscombe Cliff Road
1930	Jubb, Miss O.	12 Oban Road

1950	Kaye, Brig. G. L.	Heathland, Flaghead Road, Canford Cliffs
1949	Keating, S. J.	21 St. John's Road, Boscombe
1930†	*Keeble, Sir F. W., K.B.E., D.SC., F.R.S.	
1928	Kendall, Miss G. J., A.R.C.M.	20 Serpentine Road, Poole
1942	Killick, Mrs. M.	31 Gorsehill Road, Poole
1936	King, Mrs. A.	37 Linwood Road
1946	King, Miss A.	46 Surrey Road
1944	Kirke, Miss M.	Flat 2, St. Cross, 23 Bodorgan Road
1948	Knight, Miss A.	Apia, Fairview Road, Broadstone
1951	Lane, A. J.	Flat A, 41 Christchurch Road
1942	Lanham, Miss O.	31 Gorsehill Road, Poole
1950	Lanning, J. P.	11 Eaton Road, Branksome Park
1950	Lanning, Mrs. C. M.	,, ,,
1951	Lavender, J. H.	1 Manor Road, Christchurch
1950	Lawton, W. M.	Cleeve Court, Knyveton Road
1951	ALawton, J. N.	,, ,,
1951	ALawton, W. N.	,, ,,
1942	Le Fèvre, Miss W.	791a Christchurch Road, Boscombe
1947	Legat, A. W., M.INST.C.E.	6, Thistlebarrow Road
1947	Legat, Mrs. E.	,, ,,
1947	Legat, Miss J. P.	,, ,,
1948	Leonard, H. W.	1 Neville Court, Derby Road
1948	Leonard, Mrs. N.	,, ,,
1950	Ley, Mrs. L.	23 William Road, Queen's Park
1949	Liddell, D.	22 Marlborough Road
1949	Liddell, Mrs. S.	,, ,,
1950	Lincolne, Miss H. M.	63 Watcombe Road, Southbourne
1950	Little, D. A. J.	North Lodge, West Moors Road, Ferndown
1951	Lloyd, G. B., B.A.	58 Glenferness Avenue
1950	Locke, S. L.	Northgate, Salisbury Road, Ringwood
1950	Locke, Mrs. J. B. E., B.A.	,, ,,
1947	Logan, Miss A.	1 Branksome Wood Mansions
1947	Lovell, Miss D.	33 Commercial Road, Parkstone
1939	Lowde, Miss E., B.A.	Kilmory, York Road, Broadstone
1951	Lowe, Mrs. D. M.	43 Marryat Road, Wimbledon, London, S.W.19
1934	Lowther, Miss D. M., B.SC.	Lonsdale, Mayfield Avenue, Parkstone
1947	Lowther, Rev. W. E.	Meyrick Lodge, Bodorgan Road
1948	Lowther, Mrs. E. L., S.R.N.	,, ,,
1951	Lyver, Mrs. D. J.	Grove Lodge, Burgess Hill, Sussex
1951	Macmillan, W. E. F.	Botton Hall, Danby, Yorks.
1951	Magee, Mrs. M. L.	21 Carbery Avenue, Southbourne
1951	Marsh, Mrs. V. M.	Little Palace, Harbour Road, Southbourne
1950	Masters, C. O.	4 Gorsehill Road, Poole
1950	Mayo, H. C.	Green Lawn, 23 Crossway, Christchurch
1950	Mayo, Mrs. S. E.	,, ,, ,,
1909	*McBean, Miss S.	74 Seafield Road, Southbourne
1948	Markwick, Miss D.	67 Norton Road, Winton
1951	Marsh, Mrs. V. M.	Little Place, Harbour Road, Southbourne
1946	Marshall, Miss D.	117 N. Selsden Road, Sanderstead, Surrey
1951	Martin, Miss I. V. M. T.	142 Richmond Park Road
1951	Maude, Mrs. A. H. M.	Havenhurst Hotel, Canford Cliffs
1951	Medwin, Miss G. L.	2 Beechwood Avenue, Boscombe
1950	Megget, E. E., V.D.	14 Southlea Avenue, Southbourne
1950	Megget, Mrs. K., M.B.E.	,, ,,
1950	Mersen, Miss A., B.Sc.	27 Hamilton Road, Boscombe
1929	Meyrick, Sir George, BART.	Hinton Admiral, Christchurch
1939	Middle, Miss A. M.	Tregenna, Castle Lane
1951	Millar, Mrs. S. A. T.	239 Sandbanks Road, Parkstone

1934	Mitchell, Miss E. A.	109 Edgehill Road
1950	Mitchell, W.	St. Margaret's, Valerie Road
1949	Moir, Mrs. F.	9 Crossway, Christchurch
1950	Mountfort, C. C., M.A., F.L.S.	Woodside, Ferndown, Wimborne
1950	Mountfort, Mrs. A.	" "
1932	Mullins, Miss D. E. A.	Rosemaryne, 111 Edgehill Road
1950	Munckton, Mrs. F. E. P.	67 Portchester Road
1951	Mundy, Miss M. E.	56 Lancaster Gate, London, W.2
1951	Munford, Rev. F. E., B.A.	64 Fernside Road, Poole
1936	Murdoch, Miss J. C.	3 Rotherfield Road
1950	Murgatroyd, J. H., F.L.S., F.Z.S., F.R.E.S.	9 Warren Edge Road, Southbourne
1950	Murray, Mrs. M. L.	Redmore, Crescent Road, Branksome Park
1935	Muspratt, C. K., M.A., F.R.G.S.	25 East Avenue
1935	Muspratt, Mrs.	"
1948	Muspratt, Miss R.	44 Lansdowne Road

1948	Neil, J.	174 Cranleigh Road, Southbourne
1951	Nelson, Mrs. N. M.	Berry Court, St. Peter's Roal
1939	Newsome, S. H.	184 Belle Vue Road, Southbourne
1939	Newsome, Mrs.	" "
1943	LNicholls, Miss G.	17 Waltham Road
1950	North, Miss S. F.	4 Hampton Court, Branksome Wood Road
1948	North-Row, St. J. K.	75 Lansdowne Road

1929	Ogden, Miss E.	Vailima, Fairview Road, Broadstone
1948	Ogden, F.	30 Grosvenor Court, Vale Road
1948	Ogden, Mrs. G.	" "
1950	Ogle, Miss U.	Little Wyfold, Frankland Crescent, Parkstone
1948	Osborne, Mrs. C. H.	B6 San Remo Towers
1948	Osborne, G.	77 Hengistbury Road, W. Southbourne
1948	Osborne, Mrs. E.	" "
1944	Owen, Mrs. E.	2 Rotherfield Road, Boscombe
1950	Owen, J. S.	2 Rotherfield Road, Boscombe

1945	Paris, Lt.-Col. A., R.E. (ret'd.)	10, Carbery Avenue, Southbourne
1951	Parrock, Mrs. L.	Flat 3, 147 Holdenhurst Road
1950	Paterson, Miss M. W.	Hintonwood Hotel, Grove Road
1949	Paull, H.	20 Oxford Road
1945	Penny, Miss A.	Cottonwood, E. Cliff
1916	LPenrose, Miss F.	Little Picket, Hightown, Ringwood
1916	LPenrose, Miss M., B.SC.	" "
1948	Perceval, Mrs. W.	7 Benellen Avenue
1950	†Peters, Prof. Sir R. A., M.C., M.A., M.D., F.R.S.	14 Brookside, Headington, Oxford
1951	Peterson, Mrs. M.	22 Derby Road
1951	Pickard-Cambridge, W. A., M.A.	Brinlands, Broadstone
1951	Pickard,-Cambridge, Mrs. H.W.	" "
1946	Pickering, Mrs. G.	23 Danesbury Avenue, Southbourne
1921	Pontifex, R. D., M.A.	Dalton House, 68 Christchurch Road
1948	Pooley, E. R.	Corrie Lodge, 50 Woodville Gardens, Ealing, W.5
1947	Pope, A. E.	33 Pine Crescent, Highcliffe, Hants.
1947	Pope, Mrs.	" "
1941	Popham, Miss C. H.	White Lodge, Thorney Hill, Christchurch
1944	Poulton, V. E.	84 Shelley Road, Boscombe
1951	Price, Miss E., S.R.N.	9 Windermere Road
1946	Prideaux, Mrs. A.	Upmoor, Ravine Road, Canford Cliffs
1946	Prideaux, Miss C.	" "
1950	Pullman, Miss F. M.	Heather Lodge, 15 Burton Road

1924	Quick, Mrs.	Tregenna, Castle Lane
1951	Quillet, L. A.	"Sevenoaks," Springfield, Chelmsford

1946	Rayner, R. A.	16 Oban Road
1946	Rayner, Mrs.	,,
1951	Rayser, Mrs. M. C. J.	83 Watcombe Road, Southbourne
1945	Read, W. J., M.SC., F.R.I.C.	15 Carbery Avenue, Southbourne
1946	Read, Mrs., F.Z.S.	,, ,,
1950	Redfern, Rev. L., M.A., B.D.	46 St. Luke's Road, Bournemouth
1950	Redfern, Mrs. E., M.A.	,, ,,
1950	Redrupp, Mrs. S. P. J.	330 Poole Road, Westbourne
1924	*Reid, Mrs. E. M., B.SC., F.L.S.	Pinewood, Milford-on-Sea
1946	Retzbach, Miss A. M.	Rothbury, West Cliff Gardens
1945	Richards, Miss E., B.SC.	8 Overcliff Mansions, Manor Road
1942	Richards, Miss M.	Stour Lodge, Julian's Road, Wimborne
1946	Richardson, J. G.	Abbotsdene, Seafield Road, Friars Cliff, Christchurch
1950	Richardson, W. S., M.D., F.R.C.S.	Rossmore, Boscombe Spa Road
1926	Rix, Miss M. E. de B.	Wayside, Stourcliffe Avenue
1949	Robertson, Mrs. M.	41 Christchurch Road
1949	Robertson, Mrs. W.	24 Poole Road
1939	Robins, E. A., F.R.P.S., F.L.S., F.R.M.S.	Fairway, Stanley Road, Waterford, Lymington
1929	Robinson, Miss M. H.	Byways, Chaddesley Glen, Canford Cliffs
1929	Robinson, Miss W. A.	,, ,, ,,
1923	Roden, Miss E. M.	12 Walpole Road, Boscombe
1947	Rooke, Dr. K. B., M.B., B.CH., M.B.O.U.	Cranborne, Wimborne
1935	Rush, Miss C. J.	9 East Avenue
1943	Rushton, J.	113 Alumhurst Road
1951	Rushton, Mrs. E.	,, ,,
1951	Rust, Major F. H., O.B.E.	Beacon Royal Hotel
1951	Rust, Mrs. M.	,, ,,

1943	Sadler, H. G.	Chester House, Boscombe Spa Road
1951	Salisbury, Sir E., D.SC., F.R.S., F.L.S.	Royal Botanic Gardens, Kew, Surrey
1947	Saltmarsh, Miss M., B.A., PH.D.	3 Sunnylands Avenue, Southbourne
1942	Sanford, E. G., A.M.I.MECH.E., A.M.I.E.E.	Welbeck, Danecourt Road, Parkstone
1941	Sanford, Mrs. M. A.	,, ,, ,, ,,
1950	Saunders, Mr. H. L., L.D.S.	152 Richmond Park Road
1950	Saunders, Mrs. E. O. R.	,, ,,
1950	Sawyer, Mrs. M.	37 Belvedere Road
1938	Seare, Mrs. H.	Almer, Blandford
1951	Secretan, S. D.	Swaines, Rudgwick, Sussex
1950	Sedgewick, Mrs.	Pirbright, West Cliff Gardens
1950	Seth-Smith, D. N., B.A., M.B., B.CH.	7 Rothesay Road
1941	Sexton, Miss F.	60 Uplands Road
1951	Seward, Mrs. E. M.	The Manchester Hotel, West Cliff
1951	Sewell, Mrs. I.	Flat 1, 445 Christchurch Road
1948	Shears, Miss E.	Beverley Hall, Manor Road
1933	Sheffield, Miss I. E.	177 Richmond Park Road
1950	Shillidy, G. A. S., C.I.E.	35 Barton Court Road, New Milton, Hants
1944	LShorthouse, B.	Brookside Cottage, Exeter Lane
1937	Simmons, Mrs. I. M.	Trigonia, Spur Hill Avenue, Parkstone
1920	Simpson, N. Douglas, M.A., F.L.S., F.R.M.S.	Maesbury, 3 Cavendish Road
1945	Smith, W. G.	22 Stanpit, Christchurch
1951	Smooker, Miss G. M.	5 Meon Road
1951	Smooker, Miss L. G.	,, ,,

1947	Smythe, V. du B., F.R.N.S.	Sherwood, Irving Road, W. Southbourne
1947	Smythe, Mrs. M.	,, ,,
1950	Sobbe, F. A.	Manica, Tower Road, Branksome Park
1947	Sobbe, Miss D.	,, ,, ,,
1947	Sobbe, Miss V.	,, ,, ,,
1940	Somerville, Mrs. S.	Rumah Kechil, Pinewood Road, Ferndown
1949	Stanton, H. K.	1097 Christchurch Road
1951	Stevenson, F. W., M.R.I.	Talbot Ridge, Little Forest Road
1947	Stuart-Harris, Miss M., B.SC.	Windycroft, Worth Matravers
1946	Stuart-Harris, Miss W., B.SC.	,, ,,
1950	Sutherland, C.	36 R. L. Stevenson Avenue, Westbourne
1950	Sworder, Miss R.	12 Grosvenor Court, Vale Road, Bournemouth
1945	Taylor, Miss E.	25 Irving Road, W. Southbourne
1937	Terrell, G. H.	53 Wentworth Avenue, Boscombe
1946	Thane, Miss V., M.A.	23 Cecil Court, Charminster Road
1951	Thomas, Mrs. M.	113 Alumhurst Road
1951	Thomson, P.	Overdale, Uplands, Loughton, Essex
1951	Thomson, Mrs.	,, ,,
1948	Thornycroft, L. B.	
1950	Tibbitt, Miss M.	F.6 Pine Grange, Bath Road
1951	Tierney, Dr. C.	Netherton, Coulsdon, Surrey
1951	Tierney, Mrs.	,, ,,
1951	Tilling, W. G.	20 Streathbourne Road, Upper Tooting, London, S.W.17
1951	Tottenham, R. C.	The Elms, Wheeler's Lane, Knighton, Wimborne
1936	Trayfoot, Mrs. L. W.	25 Eaton Road, Branksome Park
1950	Trower, Miss D. E., B.A.	Uplands School, Parkstone
1944	Turner, Miss E. C.	18 Cassel Avenue, Westbourne
1949	*Turner, G. A.	Winchester House, Fir Vale Road
1950	Venning, Brig. F. E. W., C.B., C.B.E., D.S.O., M.B.O.U.	Pinewood, Butts Ash, Hythe
1950	Venning, Mrs E. L.	,, ,, ,,
1950	Venning, Miss E. J. L.	,, ,, ,,
1921	Wales, Miss N.	The Nook, 4 Ormonde Road
1945	Walker, F.	57 Richmond Park Avenue
1913	LWallace, W. G.	61 East Avenue
1945	Waller, Miss C.	76 Ensbury Park Road
1951	Ward, W. S.	44 Lesser Avenue, Clapham Common, London, S.W.4
1950	Warren, Miss A. E.	1 Gordon Road, Boscombe
1941	Watson, Miss G. V.	Chine Hall, Boscombe Spa Road
1941	†LWatt, Mrs. W. Boyd, F.Z.S., M.B.O.U.	52 Wimborne Road
1946	Watts, Miss N.	3 Dunbar Road
1936	Weekes, Mrs. M.	3 Rotherfield Road, Boscombe
1951	Wells, G.	26 Dingle Road, Boscombe
1940	West, Mrs. F. M. S.	Pineville, West Cliff Gardens
1947	West, Miss G.	2 Chessel Avenue, Boscombe
1951	AWest, I. M.	44 Gerald Road
1918	*Whitaker, S.	22 Somerset Road, Boscombe
1924	Whitaker, Miss E. M.	,, ,, ,,
1924	Whitaker, S. E., P.A.S.I.	22 Selwood Road, Addiscombe, Croydon
1951	White, Miss C.	33 Manor Road, Bexhill-on-Sea
1951	White, Miss H. A.	Little Place, Harbour Road, Southbourne
1931	AWhite, S. J.	7 Gilbert Road
1950	AWhitelaw, P.	18 Beechwood Avenue, Boscombe
1942	Williamson, F., F.R.HIST.S.	24a Rushton Crescent

1947	Wilson, Miss G.	9 Glenmoor Road, Winton
1950	Wilson, G. E.	10 Westdown Road, Kinson
1951	A Windsor, G.	Grey Lynne, Wynford Road, Parkstone
1950	Winter, W. P., B.SC.	Latimer House, 27 Horsa Road
1951	Winter, Mrs. W. P.	,, ,,
1950	Wiseman, Capt. L. G., O.B.E.	Avon Private Hotel, 4 Chine Crescent Road
1948	A Wood, Miss B., B.SC.	4 New Park Road, W. Southbourne
1951	Wood, Mrs. L.	The Oaks, Sawbridgeworth, Herts.
1950	Wood, Miss L.	54 Ophir Road
1903	†o Woodhouse, W. J., A.C.P., M.I.H.	29 Twynham Road, Southbourne
1949	Wray, D. A., M.SC., PH.D., F.G.S.	42 Canford Cliffs Road
1949	Wray, Mrs. A.	,, ,,
1932	*Wren, G. G.	420 Charminster Road
1946	Wycherley, Mrs. L.	40 Littledown Avenue, Queen's Park

Summary of the Accounts for the Year ending 30th September, 1951

Receipts.

	£	s.	d.	£	s.	d.
Subscriptions to 30th Sept., 1951 ...	516	5	0			
,, for Year 1951/52 ...	19	5	0			
				535	10	0
Rents.						
Royal Empire Society	100	0	0			
Camera Club	54	0	0			
Hire of Hall	9	9	0			
				163	9	0
Exhibition	6	1	4			
Peter Scott Lecture	23	3	10			
New Year Party	7	8	10			
Garden Party	24	18	11			
Teas	7	10	2			
Visitors (donations)	10	16	0			
Field Meetings	8	5	0			
Donation—H. A. Cooper, Esq. ..	225	10	0			
,, Camera Club ...	20	0	0			
,, Royal Empire Society	12	10	0			
,, W. G. Warner, Esq.	21	0	0			
				367	4	1
Interest on Treasury Stock ...				20	6	3
Telephone Box Receipts				1	10	0
Gas Refund by Royal Empire Society				5	17	0
Income Tax Rebate				37	12	8

Payments.

	£	s.	d.	£	s.	d.
Rates and Taxes.						
Rates	128	19	7			
Income Tax	—					
Corporation Duty	4	15	11			
				133	15	6
Maintenance of Property.						
Repairs	397	0	3			
Maintenance	77	10	7			
Caretaker	78	12	0			
Garden	57	11	0			
Library	5	0	0			
Insurance	20	5	3			
Sundries	5	18	6			
				641	17	7
Fuel.						
Coal	11	16	0			
Electricity	32	17	8			
Gas	111	17	2			
Water	4	9	8			
				161	0	6
Administrative Expenses.						
Bank Charges	13	7	0			
Postage	23	18	6			
Printing and Stationery	60	7	7			
Proceedings	98	18	10			
Telephone	10	16	1			
				207	8	0

Hire of Chairs (refunds)				1	16	6
*Gilbert White Fellowship (donation)				90	0	0
Sundries—Sale of Surplus ...					10	0
Refund of Debenture Interest ...				4	12	9
Total of ordinary Receipts				1228	8	3
Overdraft at Bank on 30th Sept. 1951	449	13	8			
Add Cheques not presented ...	11	7	0			
Due to Treasurer 30th Sept., 1951	1	14	1			
				462	14	9
				£1691	3	0

Subscriptions.						
British Trust for Ornithology ...	1	1	0			
South Eastern Union	2	2	0			
National Trust	2	2	0			
				5	5	0
* Gilbert White Fellowship Exhibition Loan				70	0	0
				1219	6	7
Overdraft at Bank on 1st October, 1950	472	9	0			
Add Cheque not presented ...	4	12	9			
	477	1	9			
Less Cash in hand	5	5	4			
				471	16	5
				£1691	3	0

* Final details of this account are not complete on September 30th, 1951.

We have examined the above accounts with the Books of the Society and the Vouchers for payment and certify the same to be correct.

A. A. FOYLE
F. WILLIAMSON } Auditors.

Bournemouth, 30th October, 1951.

WILLIAM J. WOODHOUSE,
Hon. Treasurer.

DEPOSIT ACCOUNT.

	£	s.	d.		£	s.	d.
Archæological Research Fund.							
Balance brought forward	10	13	5	Balance on Deposit	10	14	5
Interest to 31/12/48		1	0				
	£10	14	5		£10	14	5

MACDOUGAL LEGACY INVESTMENT ACCOUNT.

	£	s.	d.		£	s.	d.
Treasury Stock.							
Balance on 1st Oct., 1950	1000	0	0	Balance on 30th Sept., 1951	1000	0	0
	£1000	0	0		£1000	0	0

Council's Report for Year ending September 30th, 1951

A slight increase in membership, to a total of 445 at September 30th, 1951, has resulted from 94 new members joining the Society, against a loss of 87 through death, resignation, or forfeiture upon failure to pay subscriptions. The list includes 7 Past Presidents, 11 Honorary Members, 9 Life Members, 12 Associate Members and 38 Covenanting Members.

The Council records with deep regret the death of 19 members:—Inst.-Capt. Ainslie, Lady M. Alabaster, Mr. E. C. Bowden, Mr. W. H. Chambers, Mr. C. Freeman, Miss E. Hall, Mr. G. G. Hardy, Mr. J. M. Insch, Miss M. A. Mackay, Mr. E. McMichael, Capt. A. J. Maudslay, Mr. W. Munn Rankin, Dr. C. E. Scudamore, Mr. W. C. Simmons, Miss E. E. Twemlow, Mr. and Mrs. Wanstall, Mr. R. Watkin and Mr. S. R. Wycherley.

On the death of Mr. Wycherley, Mr. H. E. Clarke was appointed Chairman of Council and Mr. W. J. Read Deputy Chairman. Mr. Read resigned the post of Hon. Sec. when it became clear that Mr. W. S. Brown would be able and willing to accept the Council's invitation to become Hon. Sec. The Council desires to place on record its gratitude and high appreciation of the valuable services rendered by Mr. Read as Secretary of the Society. Further appointments have been those of Mr. J. H. Murgatroyd as Chairman of the Microscopical Section and Mr. W. P. Winter as Chairman of the Astronomical Section, which had been without Chairman since Capt. Ainslie's resignation.

Under Mr. E. Chambers's leadership and with Mr. H. W. Leonard as Secretary, the Committee of Chairmen of Sections has assembled programmes of a high order. Reference was made in last year's Report to the valuable work done by the Ladies' Committee responsible for despatch of programmes; the Council again thanks these ladies for their co-operation in securing early postage of communications to members.

During the year 75 Inside Meetings and 58 Field Meetings have been held, and the Council's thanks are accorded to all who have contributed to the success of these meetings. In addition an increased number of public lectures have been given, further reference to which will be found in the present "Proceedings."

The Society supplied Lantern Lectures in Natural Science, and Field Guides, for the children of London schools attending the Wick Ferry School Journey Centre, during ten weeks between April and June 1951. The series was admirably arranged by Mr. Chambers in collaboration with the Head Teachers, and the Lantern was kindly lent and operated by Mr. Woodhouse, assisted by Mr. de Castro. The Lecturers were Messrs. Chambers, Follett, Legat, Read, Williamson and Woodhouse; Field Meetings were led by Messrs. Chambers, Smith and Woodhouse.

Great appreciation was expressed by the Teachers and over 1,000 scholars for this great encouragement given to their studies in Natural Science, and the deepest thanks are extended to all who in so many ways freely gave their services to the children.

The Presidential Address, delivered by Prof. R. A. Peters on December 16th, 1950, was published in Vol. 40 of the "Proceedings." Prof. Peters also kindly conducted a large party of our members during the visit paid by them to Oxford on August 14th, 1951.

On December 9th, 1950, the first Lecture of its kind to be held in the Winter Gardens under the auspices of our Society was given by Peter Scott, M.B.E., D.S.C., on "The Severn Wild Fowl Trust." The careful preparation and organisation of this event by Mrs. Boyd Watt culminated in a great success. The large hall was filled to capacity and several hundreds of people were unable to secure admission.

Other Public Lectures included a series of four on Modern Physics, by Mr. S. Weintroub, M.A., F.Inst.P., of University College, Southampton. These lectures were admirably delivered and attracted good audiences.

As the Society's Festival Year celebration a Gilbert White Exhibition was held in Septembr, 1951. The deepest thanks of the Council are tendered to Mrs. Boyd Watt, whose untiring work as Director are put on record, and to the members of the Committee appointed to work with her on this project. A separate note on the Exhibition, with an appreciation of the generous part played by members of the late Gilbert White Fellowship, will be found in the present "Proceedings." When details are complete for publication it will be shown that the Fellowship has increased its gift in cash from £90 to £100. In the Hon. Librarians' Report reference also will be found to the gifts of books made by the Fellowship, whose Life Members, upon request, the Council will confirm as Country Members of our Society, without subscription.

Successful Parties were held on January 6th and July 28th, 1951, the latter a Garden Party. To all helpers on these occasions the Council extends congratulations and thanks.

The considerable expenditure on the Society's premises last year has made it possible to limit outlay this year to essential upkeep and repair.

No debenture interest has been payable this year and the Society holds its valuable property free of mortgage or other encumbrance. Also for the first time no Income Tax has been charged. The appeal to members to covenant for seven years has brought 38 acceptances. As some of these deeds were not signed until after payment of subscriptions had been made, the full benefit in refunds has not been realised; nevertheless, a repayment of £37 12s. 8d. has been returned to the

Society by the Income Tax authorities in respect of valid covenants. Some further information on Covenanting will be found in a note printed below in these "Proceedings."

The financial position of the Society has been set forth in the Statement supplied to members; this indicates a generally more stable capital position than reported last year.

The life of such a Society as ours can only be fostered by the selfless devotion to its work and interests which we are fortunate in receiving from so many of our members. The Museum, Library, Garden and the Society's no less important social activities have been cared for with great skill, energy and initiative by all concerned, and we have also been faithfully served by our Caretaker. To one and all the Council tenders its sincerest thanks. Special mention must also be made of an increasing number of valuable gifts made to the Society during the year. Chairmen of Sections and others will naturally desire that the appreciation of Council for these acts of generosity should be put on record in this Report.

Seven Year Covenants.

As stated above, 38 members, during the past year, signed the seven year covenant for the payment of subscriptions. This resulted in an increase of over £37 in the income of the Society, without any additional expense to the members concerned.

It is felt that, among our large membership, there are probably many others who would assist in this way, if they understood the procedure and the need.

We would emphasise that the covenants are terminated by death, that the whole business of recovering the tax is done by the Society, and that the member, if liable to taxation at the maximum rate on part of his income, undertakes no other liability than the ordinary subscription. Particulars can be obtained from the Secretary.

The Gilbert White Exhibition

The Society celebrated the Festival of Britain by an Exhibition, held September 19th-22nd, illustrating the Life and Work of the famous Naturalist, Gilbert White of Selborne (1720-1793).

The Exhibition was opened by the Earl of Stamford, great-great-grand nephew of Gilbert White, who was introduced by Mrs. Boyd Watt, Exhibition Director. In his brilliant address, Lord Stamford congratulated very warmly all those who had worked so hard to make the Exhibition a success. In referring to Gilbert White's book, "The Natural History of Selborne," published in 1789, the year of the outbreak of the French Revolution, he said: "To me it is always a singular coincidence that this year of 1789, which brought a development so disturbing and agitating to men's minds, ... should also see the publication of a book which was to have such a calming and restful effect on people all over the world." The warmest thanks of the Society to Lord Stamford were expressed by Mr. H. E. Clarke, Chairman of Council.

During the Exhibition the following half-hour Lectures were given:—

"Gilbert White as Ornithologist,"
by Roland Green, M.B.O.U., F.R.S.A., V-P., R.S.P.B.
"Gilbert White and Selborne,"
by A. W. Legat, M.Inst.C.E.
"The Antiquities of Selborne,"
by F. Williamson, F.R.Hist.S.
"Gilbert White as Zoologist," by Oliver Hook, F.Z.S.
"Sketches of Birds Mentioned by Gilbert White,"
by Roland Green, M.B.O.U., F.R.S.A., V-P., R.S.P.B.
"The Village of Selborne, Hampshire,"
by Dr. L. B. Langmead, M.R.C.S., L.R.C.P., F.Z.S.
"Gilbert White and his Brothers,"
by Mrs. Boyd Watt, F.Z.S., M.B.O.U.

Special mention must be made of our Guest Lecturers, who had travelled long distances to pay their tribute to Gilbert White. Mr. Roland Green, the eminent bird artist, at his lecture on the opening day, gave consent for his sketches to be auctioned, Major Maxwell Knight, O.B.E., kindly acting as auctioneer. On the Friday, Mr. Roland Green's sketches were purchased at the meeting and he donated the entire proceeds of both these occasions to the Exhibition funds, a generous gesture which drew forth enthusiastic applause. Dr. L. B. Langmead had made a special visit to Selborne to take photographs for his lecture, at which he showed a fine series of lantern slides.

It is difficult to speak with adequate appreciation of the many exhibitors. Detailed descriptions of the exhibits are given in the twelve-page Catalogue. Lord Stamford's water colour sketch by S. H. Grimm, of the Hermitage at Selborne, signed and dated

1777, which forms the frontispiece to the First Edition of the "Natural History of Selborne," should be specially mentioned. Other members of the White family who exhibited are Miss Katharine M. White, Miss Cornelia White, Mr. E. F. G. Chapman and Mrs. Christina Hedderwick, who all showed exhibits relating personally to Gilbert White.

Among the exhibits from the extensive collection of the Rev. W. Sidney Scott was a First Edition in diced calf, one of 50 specially bound by Kalthoeber. Mr. Scott collected the exhibits from the Curtis Museum, Alton, and the Alton Art Society, and brought them down by car with his own and finally returned them all to their owners. From the well-known collection of Mr. Wilfred Mark Webb, O.B.E., Hon. Secretary of the Selborne Society, came the original MS. of "The Calendar of Flora" and Gilbert White's "Priest's Orders," among other valuable exhibits. Miss Winifred M. Dunton, late Hon. Secretary of the Gilbert White Fellowship, showed copies of letters from Carlyle to Eckermann, 2nd Aug., 1848 and 5th Jan., 1849 ("Yale Review," July 1926) on Gilbert White's "Natural History of Selborne." Of the editions of the "Natural History" lent for the occasion, all but the rarest (shown in glass cases) were exhibited most appropriately in a bookcase, bearing a presentation label, a gift to the Society from the Gilbert White Fellowship in 1950. The photostat copy of Gilbert White's will was obtained for the Society by Miss Hilda Hooper, who made several visits to Somerset House for it. Shown with it was a pedigree of the White family, undertaken by her own research.

One of the outstanding features of the Exhibition was the Georgian Room, where a valuable collection of furniture and ornaments, arranged by Mr. W. G. Smith and lent by him and by Messrs. J. J. Allen, with the help of Mr. T. H. Bickel, was shown. Here also were Gilbert White's barometer and fire-dogs and a fine oil portrait of Daines Barrington, lent by Lord Barrington. Mr. Smith was also responsible for the excellent lighting arrangements, and for the screens which formed the alcoves, which he set up with the help of Mr. de Castro. Here were shown the large scale map of Selborne, in colour, the personal work of Mr. Ernest Chambers, with sketches of plants in the area by other members; drawings in colour of geological sections, the work of Dr. D. A. Wray; sketches in black and white and in colour, of birds by Mr. Roland Green, who generously donated a percentage of sales to the Exhibition funds; and photographs of birds by Mr. Oliver Pike and Mr. Eric Hosking, by courtesy of Messrs. Ilford, Ltd., obtained by Mr. Legat and mounted by him and his helpers. There were hand-written labels to the exhibits, the generous gift of Mr. J. C. Crawshaw. The Exhibition Secretary, Mr. H. W. Leonard, among other responsibilities organised the visits of school children with their teachers during the mornings, with the help of Mr. du Bédat Smythe.

Mr. Foyle and his helpers officiated at the entrance and Mr. Brown and Miss Lowther at the Bookstall, their efforts adding considerably to the Funds. The experienced help and guidance given by Mr. Williamson cannot be assessed. Only those engaged in arranging the Exhibition can realise the amount of work he accomplished.

Great praise is due to the Tea Committee under the leadership of Mrs. Brimicombe. The flower decorations and the service lived up to the high standard we associate with these ladies. The warmest thanks are due to all, including our Caretaker, Mrs. Freeth, who co-operated so efficiently and willingly.

The Exhibition received most gratifying publicity, including a broadcast on September 16th at 2.15 p.m., arranged by Mr. Ian Curtis, Editor of West Country Diary; excellent articles appeared in "The Times" (September 21st) and in the "News Chronicle" (September 18th); accounts also in "The Western Gazette, "The Bournemouth Times," and twice in "The Bournemouth Daily Echo." This opportunity is taken of putting on record the Society's appreciation of these valuable services. At the Entrance Gate, the new notice board, the gift of Mrs. Read, showed a stencilled announcement of the Exhibition (her own work), while above it waved a gallant flag, lent by Mrs. Wycherley.

(Signed) WINIFRED BOYD WATT,
Exhibition Director.

Programme of the Society's Activities, 1950-1951

GENERAL AND NON-SECTIONAL.

1950.
Dec. 2nd. Annual General Meeting.
Dec. 16th. Presidential Address: "Recent Trends in Biochemistry," by Professor Sir R. A. Peters, M.C., M.A., M.D., F.R.S.

EXHIBITIONS AND ENTERTAINMENTS.

1950.
Oct. 11th to 14th. Exhibition representative of the Society's activities.
1951.
Jan. 6th. New Year Party.
July 28th. Garden Party.
Sept. 19th to 22nd. Gilbert White Exhibition (Society's Festival Year Celebration).

OPEN PUBLIC MEETINGS.

1950.
Nov. 8th. "The Life of the Gannet" (Film) with a commentary by Mrs. W. Boyd Watt.
Dec. 9th. (At Winter Gardens). "The Severn Wild Fowl Trust," by Peter Scott, M.B.E., D.S.C.
Dec. 13th. "Water, Wind and Sand," by W. J. Woodhouse.
1951.
Jan. 10th. "Christchurch Priory," by F. Williamson.
Mar. 7th. "Our Scenic Heritage: Ballard Down to Lulworth," by D. A. Wray.
Mar. 31st. "More Flowers of the Bournemouth Area," by Mrs. W. Boyd Watt.

A Series of four Lectures in Physics, by S. Weintroub, M.A., F.Inst.P.

1951.
Jan. 24th. (I) The Establishment of Standards of Time, Length and Temperature.
Jan. 31st. (II) Cosmic Exploration: Radio-Astronomy and Astro-Physics.
Feb. 14th. (III) New Methods of Communication: Television, Radar, Optar and Sonar.
Feb. 28th. (IV) New Methods of Geophysical Exploration: The Earth and its Interior.

The following Evening Lectures were open to friends of members but not to the general public:—

Jan. 17th. Ornithological Meeting, jointly with B.T. for O., by Bruce Campbell, M.B.O.U.

1951	
Jan. 27th.	“Bournemouth Countryside in Colour,” by A. W. Legat.
Feb. 24th.	“Medicinal Herb-Lore,” by E. Chambers.

SECTIONAL.

Archæological and Historical*

1950.	
Oct. 28th.	“A Visit to Northern Italy,” by Professor J. Cameron.
Nov. 25th.	“English Dialects,” by F. Williamson.
1951.	
Feb. 21st.	“The Story of the Ball,” by F. W. Robins, F.S.A., F.R.G.S.
Mar. 8th.	“The Spire of Salisbury Cathedral,” by W. A. Chaplin, F.R.P.S.
Mar. 29th.	Godlinston Farm, Knitson Lynchets, Nine Barrow Down and Corfe (F. Williamson).
Apr. 10th.	(Jointly with Photographic). “Some Cornish Antiquities,” by W. S. Brown.
Apr. 13th.	(c)* Stone Circles of Dorset (F. Williamson).
Aug. 25th.	(c) Portland Bill (S. C. S. Brown and F. Williamson)
Sept. 13th.	(c) Some Saxon Churches of Hampshire (F. Williamson).

Astronomical.

1950.	
Nov. 23rd.	“The Sun,” by S. R. Wycherley and H. E. Clarke.

Botanical.*

1950.	
Oct. 7th.	Hengistbury Head (Miss H. Gorringe).
Oct. 9th.	Stoney Down to Corfe Mullen (Miss O. Lanham.)
Oct. 19th.	(Jointly with Microscopical). “Ferns,” by Brig. F. E. W. Venning.
Nov. 7th.	(c) New Forest (The Misses Penrose).
Nov. 11th.	“Some Botanical Curiosities,” by E. A. Robins.
Dec. 14th.	“Ceylon,” by Lieut.-Col. E. E. Megget.
1951.	
Jan. 13th.	“Wild Flowers in Situ,” by Miss U. M. Ogle.
Feb. 8th.	“Palms and Man,” by E. Chambers.
Mar. 16th.	(Jointly with Zoological). Hinton Admiral (Miss Banham).
Mar. 21st.	(c) Lepe and Exbury Gardens (Miss Banham and Brig. F. E. W. Venning).

* See also under Open Public Lectures. Field Meetings by coach are marked (c); names of Leaders are shown in brackets.

1951	
Apr. 11th.	(Jointly with Zoological). Lytchett Heath (Miss Banham).
Apr. 17th.	Holmesley (Miss P. Jenkins).
Apr. 21st.	Chewton Glen (Miss K. Gorringe).
Apr. 25th.	Sturminster Marshall and Kingston Lacey (Mrs. M. James).
May 1st.	(c) Burley Rock Gardens and New Forest Arboretum (E. Chambers).
May 4th.	Wool, Cole Wood (W. J. Brown).
May 12th.	Pamphill and Cowgrove (Miss K. Gorringe).
May 16th.	(c) (Jointly with Zoological). Sloden Wood and Ironswell Pond (Misses Penrose).
May 18th.	Bloxworth and Bere Regis (Miss Banham).
May 29th.	Studland Heath and Littlesea (Miss Banham and Miss Ogle).
May 31st.	Woodtown, West Parley (Miss K. M. Chilver).
June 7th.	East Parley Heath (Miss K. M. Chilver).
June 15th.	Corfe, East Hill (Miss Ogden).
June 23rd.	(c) (Jointly with Geographical). Tintinhull Gardens and Ilchester (H. de Castro).
June 28th.	(c) Pepper Box Hill (Miss M. Brumell).
June 29th.	(Club). "Orchids: British and Foreign," by E. Chambers.
July 3rd.	Spettisbury (Mrs. M. James).
July 10th.	Wareham Water Meadows (Miss Banham and W. J. Brown).
July 12th.	(Jointly with Zoological). Studland and Ballard Down (Miss Banham and Miss Ogle).
July 17th.	Swanage, Durlston Head and Downs (Mrs. E James and Miss Lanham).
July 20th.	(c) Blackbush and Burley (W. G. Smith).
July 23rd.	St. Catherine's Hill and Town Common (W. G. Smith).
July 31st.	(Jointly with Zoological). Morden Park and Woolsbarrow Camp (Mr. and Mrs. Belcher).
Aug. 3rd.	(c) Hythe and Lepe (Brig. F. E. W. Venning).
Aug. 8th.	(c) Chapman's Pool and Worth Matravers (Misses Stuart-Harris).
Aug. 10th.	Holmsley (Miss P. Jenkins).
Aug. 18th.	(Jointly with Zoological). Christchurch Meadows (Mrs. W. Boyd Watt).
Aug. 21st.	Parkstone Golf Links (Miss Banham and W. S. Brown).
Aug. 31st.	Lytchett Matravers (Miss Banham and W. S. Brown).
Sept. 4th.	Corfe (Scotland Farm). (W. S. Brown).

1951	
Sept. 6th.	(Jointly with Zoological). By motor launch to Goathorn (Mrs. W. Boyd Watt).
Sept. 11th.	Hengistbury Head (Miss K. Gorringe).
Sept. 29th.	Beaulieu Road Station (W. S. Brown).

Entomological.

1950.	
Nov. 21st.	"The Breeding and Rearing of Caterpillars," by J. F. Butterworth.
1951.	
Jan. 23rd.	(Club). "The Life Cycle of Lepidopterous Insects," by W. S. I. Cox.
May 17th.	(Club). "Butterfly Collection near Bournemouth," by W. S. I. Cox.

Geographical.*

1950.	
Nov. 18th.	"Roads of Dorset," by H. de Castro.
1951.	
Jan. 15th.	"Bruton and South Somerset," by H. de Castro.
Sept. 14th.	Bere Regis Area (N. du B. Smythe).

The following outings by coach were led by the Chairman, H. de Castro.

Apr. 27th.	(c) Cranborne.
May 26th.	(c) Nunney Castle, Windmill Hill, Maesbury Castle.
June 23rd.	(c) (Jointly with Botanical) Tintinhull Gardens and Ilchester.
July 14th.	(c) Glastonbury and Muchelney Abbey.
July 25th.	(c) Along the Stour Valley.
Aug. 14th.	(c) Visit to the Colleges of Oxford (Jointly with H. E. Clarke).
Sept. 26th.	(c) Broad Chalke Valley.

Jointly with Photographic: See eight items under Photographic.

Geological.*

1950.	
Dec. 30th.	"Geology as a Hobby," by J. Beale, M.A.
1951.	
Jan. 20th.	"The Topography of the Bournemouth Area," by H. Bury.
Feb. 17th.	"Recent Geological Discoveries in Purbeck," by W. Heap.
Feb. 20th.	(Club) "New Methods of Measuring Geological Time," by H. Bury.
Feb. 27th.	"The Origin, Growth and Decay of Mountains," by D. A. Wray.

* See also under Open Public Lectures.

1951

Mar. 17th. (Jointly with Physical) "Seismology, the Study of Earthquakes," by W. P. Winter.

Mar. 19th. (Club) "Durlston Bay" (I), by W. C. Simmons.

May 22nd. Durlston Bay (II), (W. Heap).

June 10th. Highcliffe and Barton-on-Sea (E. St. J. Burton).

July 7th. (c) Portesham, West Bay and Waddon Hill (D. A. Wray).

Microscopical.

1950.

Oct. 19th. (Jointly with Botanical) "Ferns," by Brig. F. E. W. Venning.

Nov. 16th. "The Mycetozoa," by E. Chambers & S. R. Wycherley.

1951.

Jan. 18th. "Wool as a Textile Fibre," by W. J. Read.

Feb. 15th. "Microscopic Objects of Interest," by W. J. Woodhouse.

Mar. 15th. "Parasites of Mammals and Birds," by J. H. Murgatroyd.

Apr. 19th. "The Relatives of the Spider," by J. H. Murgatroyd.

Photographic.*

Jointly with Zoological :—

1950.

Oct. 26th. "Life of the Gannet" (Film); commentary by Mrs. W. Boyd Watt.

1951.

Apr. 5th. "Spiders, their Life History and Habits," by E. A. Robins.

Jointly with Geographical :—

1950.

Nov. 28th. "New York and its Environs," by S. R. Wycherley.

Dec. 7th. "The Clyde in Colour," by A. W. Legat.

Dec. 19th. "Dinard and St. Malo," by A. W. Legat.

1951.

Jan. 4th. "Dinan and St. Michel," by A. W. Legat.

Feb. 13th. "The Dorset Countryside," by E. G. Bristowe.

Mar. 1st. "More Excursion Memories in Colour," by A. W. Legat.

Mar. 13th. "A Camera in Cornwall," by Miss V. M. Ogle.

Aug. 27th. (c) Lacock Abbey (H. de Castro and A. W. Legat).

1950.

Nov. 15th. "Rothesay in Colour" (Film); commentary by A. W. Legat.

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* See also under Open Public Lectures.

1951	
Jan. 9th.	"With a Camera along Hadrian's Wall," by Dr. J. A. Hartley.
Feb. 1st.	"With a Camera in Central Switzerland," by John Reid.
	Jointly with Archaeological :—
Apr. 10th.	"Some Cornish Antiquities," by W. S. Brown.

Physical and Chemical.*

Lectures by the Chairman, H. E. Clarke :—

1950.	
Oct. 5th.	"Glass."
Nov. 4th.	"The Chemistry of Ceramics" (jointly with Mr. E. Baggaley).
Nov. 9th.	Visit to Pottery of Branksome Ceramics Ltd.
1951.	
Jan. 25th.	"Ceramics (II)."
Jan. 30th.	Visit to Works of Sharp, Jones & Co., Ltd.
Feb. 3rd.	"An Indian Research in the Physics of Plant Physiology."
Mar. 3rd.	"Some Chemical Aspects of Bacteria and Viruses."
Mar. 17th.	(Jointly with Geological) "Seismology, the Study of Earthquakes," by W. P. Winter, B.Sc.
Apr. 7th.	"Chemistry for Non-Chemists (I)."

Zoological.*

1950.	
Oct. 24th.	(Club) "Anatomy of the Limbs of Mammals," by B. Gorton.
Oct. 26th.	(Jointly with Photographic) "Life of the Gannet" (Film) ; commentary by Mrs. W. Boyd Watt.
Nov. 3rd.	(c) Zoological Gardens, Ferndown (Mrs. W. Boyd Watt).
Nov. 30th.	(Club) "A Talk on Bones," by B. Gorton.
1951.	
Feb. 10th.	"Some Mammals of the New Forest," by Oliver Hook, F.Z.S.
Mar. 10th.	"A Few Notes on Grebes," by J. C. Follett.
Apr. 4th.	Stanpit Marshes (Miss C. Popham).
Apr. 5th.	(Jointly with Photographic) "Spiders, their Life-History and Habits," by E. A. Robins.
Apr. 23rd.	(Club) "Methods of Bird Classification (I)," by J. F. Butterworth.
May 10th.	(c) Bristol Zoo (Mrs. W. Boyd Watt).
Aug. 16th.	(Club) Members' Experiences in Natural History; arranged by W. S. Brown.

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* See also under Open Public Lectures, and jointly with Botanical.

Reports for the year ending September 30th, 1951

Library

The re-organization of the Library has been continued during the year. Additions to the stock total 240 books, and to accommodate these extra units of shelving, one formerly the property of the Gilbert White Fellowship, have been provided, which fortunately entailed no cost to the Council. Mr. Williamson and Mr. de Castro kindly adapted this shelving to the needs of our Library.

The elimination of surplus books has been carried out; these have been gratefully accepted by the Women's Voluntary Services.

There has been a decline in the number of books and periodicals borrowed—330 as against 494 in 1949-50. Since January, 1948, the Society has purchased 83 recently published books (16 in the present year), covering all sections of the Society's activities. They include nearly all of the New Naturalist's Series of Manuals published by Collins. Members are recommended, therefore, to make fuller use of the lending facilities. Two books may be borrowed at one time for a period of one month.

The two volumes of Botanical Records, kept by the late Mr. Wadlow from 1920 to 1945, have been placed in the Reference Library.

Very useful assistance has been given by Mrs. Perceval, whom the Council on 2nd July, 1951, were pleased to appoint Assistant Librarian.

The thanks of the Society are due to the following members for gifts of books and periodicals, viz. :—Mr. Bury, Major Cooper-Hunt, Mr. Fountain, Mr. Legat, Miss Lowther, Miss Penrose, Mr. and Mrs. Read, Mrs. Simmons, Mr. du Bédat Smythe, Mr. Waltham, Mr. Watkins and Mr. Whitaker.

The Gilbert White Fellowship gift includes a valuable bookcase and 88 books, of which 26 are various editions (many rare) of White's "Natural History of Selborne." The remaining 62 works relate to Nature Study and include two volumes of "The Life and Letters of Gilbert White," by Rashleigh Holt White.

The additions noted represent a total addition by gift during 1950-51 of 224 books.

A. A. FOYLE.

Museum

A considerable amount of work has been done during the past year, but much still remains. The mere routine work of keeping the collections in reasonable condition entails a lot of labour, and many of the collections require considerable overhauling to make them easily accessible to members. In the Archæological Room, on the upper floor, a large number of specimens of implements and pottery were in small boxes or parcels just as they were received, and these have all been labelled and put in cabinets (Nos. 60-63). The Ewbank collection of Indian butterflies has been gone through and part of it re-labelled. It is a good collection and housed in cabinets 41 and 14. A cabinet has been set up with various entomological specimens suitable for show purposes. Other cabinets in the entomological Section are receiving attention, with the help of the Chairman of that Section and of Miss L. Child.

The cabinets containing minerals and rocks are now housed in the hall, and the rock specimens have been placed all together in one cabinet (No. 46). The mineral cabinets are much overcrowded, and more accommodation will have to be found for mineral specimens.

Four showcases were lent to the Bournemouth Festival of Britain, and afterwards were used for the Gilbert White Exhibition.

A small collection of old coins, English and foreign, has been arranged and catalogued by Mr. V. du Bédat Smythe, and can be seen on application to the Hon. Curator.

Several gifts of specimens have been received from various members of the Society, each of whom has been suitably thanked.

Loans of specimens have been made to members for exhibition and lecture purposes.

Lantern Slides. For the benefit of new members it may be recorded that the Society has a collection of about 8,000 lantern slides, covering many subjects, all available for the use of members. During the year the following have been added :—55 Lepidoptera (coloured) from Mr. Bédat Smythe, 80 various from Mrs. McDougall, and over 1,500 from Mrs. Wycherley, who also presented many drawings of scientific subjects made by the late Mr. S. R. Wycherley, which are suitable for use with the epidiascope. The total number of slides is getting on for 10,000.

F. WILLIAMSON.

Garden

The thanks of the Committee are due to the following members for gifts of plants :—Mrs. Austin, Mrs. Chomé, Miss Knight, Mrs. Moir, Miss Sheffield, Capt. Sykes, Messrs. W. S. Brown, W. S. I. Cox, B. Gorton, H. C. Mayo, H. W. Leonard, and W. J. Read.

A garden hose with winder and fittings has been kindly presented by Mrs. Clarke.

The marked improvement in the condition of the lawn is due to the unremitting efforts of Mrs. Chomé, who also provided lawn sand and grass seed.

Much credit is due to Mr. and Mrs. Leonard for the constant attention given to the flower-bed extending under the Museum windows, which has again resulted in a fine show of flowers throughout the summer.

Thanks to the gift of a number of young rhododendron plants and peat by Sir George Meyrick, it has been possible to make an extension of the Shrubbery.

The *Catalpa bignonioides* (Indian Bean Tree) in the front garden has again made an attractive display.

H. G. SADLER.

Archaeological and Historical

During the year 6 lectures and 4 field meetings have taken place. Two of the latter were of outstanding interest, the first, held in April, was to the Stone Circles of Dorset, and the party were able to visit five out of seven reputed circles in the county. In September some of the Saxon Churches of Hampshire were visited, and although the full programme was not completed, it was found possible to see six churches where some Saxon features still remain. Altogether there are fourteen Hampshire churches containing Saxon work, and two with features combining Saxon and Norman, so there is plenty of material for future outings of a similar character.

It will interest members to know that excavations of archæological sites in the neighbourhood have been conducted in recent months. The British Museum has been responsible for work at Hod Hill, under the direction of Professor Ian Richmond, and sections have been cut through both the prehistoric and the Roman defences. These cuttings have now been filled in, and work will be resumed next autumn. Reports will appear in the Dorset N. H. & A. Society's Proceedings in due course.

Excavations have also taken place on a Romano-British site at Gorley Hill, 2½ miles south of Fordingbridge, and 1 mile east of the River Avon. The work was directed by the Ministry of Works, and our Society was represented among those who assisted. Pottery sherds were discovered, and a number of hearths and ovens uncovered, with the remains of the dome of a kiln, point to the use of the site for the manufacture of pottery over a long period of time, from the first to the fourth century A.D. Much of the pottery was of a crude character. A section was cut through the western rampart and ditch, which revealed two distinct periods of construction.

Perhaps the most interesting discovery was made a day or two before the work closed down, of what may prove to be a cremation hearth site It is intended to resume work next year.

F. WILLIAMSON.

Botanical

Lectures and Field Meetings have been well supported. The Section was welcomed for the study of exotic plants at Exbury, Tintinhull, Lytchett Heath, Woodtown and Hinton Admiral and the Burley Rock Gardens. Wild Phanerogams of interest recorded during the year include the Large-flowered Mullein, (*Verbascum virgatum*. Stokes) from Burton Heath, the Finger Panic-grass (*Digitaria ischaenum*. Schreb.) found by Mr. Read as a lawn weed, and the Angular-stemmed Solomon's Seal, (*Polygonatum officinale*), found by Mr. W. G. Smith near Burley Street. Exceptional growth of *Neottia nidus-avis* at Pepper Box Hill again shews that the plant is dependent on the rainfall of the previous year. *Drosera anglica* was abundant in the line-side bog near Holmsley Station. Cryptogams new to Hampshire, *Hypnum intermedium* and *Preissia quadrata*, were recorded by Mr. E. C. Green from a calcicole community in Holmsley Inclosure.

The Section is grateful to all Lecturers and Leaders of Field Meetings.

ERNEST CHAMBERS.

Entomological

There have been almost weekly enquiries (often from non-members) on Entomological matters, which may be interpreted as indicating an interest from outside in our Society and in this Section.

Owing to the very variable weather *Lepidoptera* have not been in evidence as much as usual during the past year.

Night flying moths, particularly *Noctuæ*, have, however, been attracted to light to a greater extent, but only on those evenings when the wind has died down at sunset and the atmosphere has been fairly warm.

The presence of *Aphis* in the garden has been less frequent than usual. This may have been due to the heavy rains we have had this summer.

This year the winged ants made their nuptial flight on a warm day at the beginning of September. As this does not take place on the same day, or even the same month, every year, it is remarkable that different communities of ants, separated miles apart, should have chosen the same day for their summer flight.

W. S. I. COX.

Geographical

The Section's independent Lectures were three in number, but seven additional Lectures were given during the year in co-operation with the Photographic Section on subjects with a Geographical background.

Seven Field Meetings to places of interest were held during the summer; two were run jointly with the Geological and Photographic Sections.

In August a visit to the Colleges of Oxford was made at the kind invitation of our President, Professor Peters; this was led by the Chairman of Council and was very well attended.

H. DE CASTRO.

Geological

The passing of Mr. W. C. Simmons was a severe loss to our section, for despite the illness which handicapped him we could always rely on his valuable experience and guidance.

In the Field Meetings an attempt has been made to examine as wide a variety of formations as possible, ranging from the Barton Cliffs to the Oolite Quarries and sections in West Dorset. We were also indebted to Mr. Heap not only for describing the fine section in Durlston Bay but also for leading a party there later in the session.

D. A. WRAY.

Microscopical

In December 1950 this section suffered a very severe set-back by the death of its indefatigable Chairman, Mr. S. R. Wycherley. During the year the section's programme of monthly lectures was continued, although lecturers have been difficult to find.

In November 1950 Mr. E. Chambers gave an extremely interesting talk on The Mycetozoa, and in January 1951 Mr. W. J. Read gave an excellent account of the preparation and uses of wool fibres in industry, his talk being illustrated by lantern slides and samples of the various wools. Mr. W. J. Woodhouse followed in February with a talk on Common Objects for the Microscope, in which he covered a very wide range of subjects.

In March the present Chairman lectured on The Parasites of Mammals and Birds, and in April he gave a talk on the Spider's Relatives.

Following upon Mr. Wycherley's death, the valuable series of practcal instruction classes which he had inaugurated was discontinued, but it is hoped to start the series again during the coming winter.

J. H. MURGATROYD.

Photographic

During the winter season this section joined with the Geographical Section in sponsoring most of its meetings, and one was held jointly with the Archæological Section. All were well attended. In some instances Lecturers who were not members of the Society, kindly assisted, and to them, especially, our thanks are given.

In collaboration with the Geographical Section a visit was paid to Lacock Abbey on August 27th. This was the home of Fox Talbot, the English founder of photography. A special Fox Talbot Exhibition was in progress and we had the good fortune to be conducted around it, and to be addressed on it, by Harold White, F.R.P.S., F.I.B.P., who is, perhaps, the leading authority on the work and life of Fox Talbot. Cameras used by Fox Talbot were examined, including the first ever made. A collection of the earliest photographs was also shewn.

New members interested in Photography are asked to offer their help, where possible, toward the activities of this section. Slides to illustrate any lecture can usually be found in the Society's large and comprehensive collection. Members should also remember that their own photographs can be projected by the Epidiascope; far more use could, and should, be made of this instrument.

We would like to thank the Bournemouth Camera Club for their help in loaning their Lantern Slide Display Cabinet, which has been a most attractive feature of our Exhibitions.

A. W. LEGAT.

Physical and Chemical

It was promised in the Report of this Section published in Vol. 39 of the "Proceedings," that outside activities, in the form of visits to industrial plants in this area, would be promoted. During this year, in connection with lectures given on the Chemistry of Glass and Ceramics, visits have been made to potteries engaged in the manufacture of table-ware and of industrial stoneware.

The Presidential Address of the year was devoted to modern Biochemistry, and this has been supplemented by a lecture on certain chemical aspects of Bacteria and Viruses. In order to assist non-chemists in an appreciation of the technicalities of these and future lectures of a chemical nature, the writer has begun a series of lectures in fundamental chemistry for beginners in the subject.

We were privileged to secure Mr. S. Weintroub, M.A., F.Inst.P., of Southampton University College, for a series of four lectures on recent developments in Physics. In these lectures, which were supported by growing audiences as the series proceeded, Mr. Weintroub referred to the newest techniques in the measurements of time and space, in radar, in television and in geophysical exploration.

The reinstatement of the Astronomical Section under the Chairmanship of Mr. W. P. Winter, B.Sc., will open the way to useful joint activity with that Section in astrophysical studies.

H. E. CLARKE.

Zoological.

Thirteen lectures and talks were given during the year, including one by Peter Scott, M.B.E., D.S.C. on "The Severn Wild Fowl Trust," illustrated by colour films. This was held in the Winter Gardens and was the first occasion in the history of the Society of a large hall being taken for a meeting. Every one of the 1,600 seats was filled and about two hundred people were turned away.

Of the three evening meetings, one was held in conjunction with the British Trust for Ornithology, the Address being given by the Secretary of the Trust, Mr. Bruce Campbell, M.B.O.U. Three lectures were held jointly with the Photographic Section.

Of the eleven field meetings, seven were held jointly with the Botanical Section. Visits to the Zoological Gardens at Bristol and Ferndown were well attended.

The monthly Magazine, British Birds, continues to be circulated to two Reading Circles, numbering fifteen members.

SUMMARY OF OBSERVATIONS.

Mammalia.

Mr. Edwin Cohen, F.Z.S., M.B.O.U., contributes the following records :—

Bank Vole (*Evotomys glareolus*). Two trapped in greenhouse on March 25th; one trapped on March 27th at Sway.

Common Shrew (*Sorex araneus*). One trapped March 30th.

Pigmy Shrew (*Sorex minutus*). One trapped, March 30th, at Sway.

Aves.

Very few members have sent in any notes at all this year, which seems a pity.

The first outing to Stanpit was on April 4th. No very interesting birds were seen, with the exception of a gull, which was flying with a flock of others, put up by an aeroplane. It was pure white, and seemed roughly to be between a Herring Gull and Common Gull in size. It finally flew off, in a S.E. direction and gave no chance of recognition from colour of leg or beak. We hoped it might be an Ivory Gull (*Pagophila eburmea*), but there was also a suggestion of an albino from a well known local ornithologist.

Miss Jellicoe sent an interesting note of Little Gulls (*Larus minutus*) seen on Stanpit Marshes, March 25th; one adult and two immature.

A very interesting record of a Golden Oriole (*Oriolus o. oriolus*) came from Mr. Singer, who saw the bird twice on June 6—7.

Big flocks of Golden Plover (*Pluvialis a. apricaria*) were seen at Bransgore , December 1—8 (C.P.).

An adult cuckoo (*Cuculus c. canorus*) was seen near Burley Beacon on August 23rd (C.P.).

There have been one or two records of Dartford Warblers (*Sylvia undata dartfordiensis*). Major Payne watched a family near Burley. The young ones had only just left the nest. It is possible that there are two or three pairs breeding in this neighbourhood.

Miss M. Penrose reports a small but satisfactory increase in Dartford Warblers in the neighbourhood of Ringwood. She also reports that there was an exceptionally large number of wild geese in and about the Avon Valley during January-March, but was not able to identify the species.

GENERAL NOTES.

Raven (*Corvus c. corax*) seen occasionally on or near Stanpit Marshes (C.P.).

Hooded Crow (*Corvus c. cornix*). One seen at Stanpit, May 28th (J.C.).

Corn-Bunting (*Emberiza calandra*). Still no reports of this bird anywhere in the area.

Wood-Lark (*Lullula a. arborea*). Several heard singing Thorney Hill, Oct. 1—8 (C.P.).

Pied Wagtail (*Motacilla alba yarrelli*). Flocks of over 30 at Kinson, August 18th, and flocks of over 50 near Romsey Abbey, September 15th (F.W.).

Mistle-Thrush (*Turdus v. viscivorus*). Very numerous this autumn (C.P.).

Whinchat (*Saxicola rubetra*). Two seen Thorney Hill, August 30th. Not very common (C.P.).

Stonechat (*Saxicola torquata hibernans*). An increase in Forest and neighbourhood.

Black Redstart (*Phoenicurus ochurus gibraltariensis*). One reported flying into room at Boldre, near Lymington, October (Miss Taylor).

Merlin (*Falco columbarius œsalom*). Good view of one seen near West Wellow, October 2nd (V.G. and C.P.).

Shelduck (*Tadorna tadorna*). A few pairs built on Stanpit Marshes this summer (J.C. and C.P.).

Mallard (*Anas p. platyrhyncha*). Large numbers seen on River Avon, October (V.A. and C.P.).

Great Crested Grebe (*Podiceps c. cristatus*). Two seen Stanpit Marshes, March 14 (J.C.).

Red Throated Diver (*Colymbus stellatus*). One reported Stanpit harbour, May 29 (J.C.).

Turtle Dove (*Streptopelia t. turtur*). Three on Stanpit Marshes, August 8 (J.C.).

Bar-tailed Godwit (*Limosa l. lapponica*). Two seen Stanpit Marshes, May 22 (C.P.).

Black-tailed Godwit (*Limosa l. limosa*). One on Stanpit, April 7 (J.C.).

Abbreviations:

J.C. = Mr. Crawshaw.
C.P. = Miss C. Popham.
F.W. = Mr. Williamson.
V.G. = Miss V. Goodwin.

CHRISTINE POPHAM.
WINIFRED BOYD WATT.

Professor Sir Rudolf A. Peters.

Every member of our Society would be delighted to read in the New Year (1952) Honours the name of our President for 1950-51. In recognition of his distinguished services to Biochemistry, Professor Peters received the dignity of Knight Bachelor. We wish him many more years of health and happiness at Oxford, and we are deeply sensible of the honour he did us in becoming our President. Sir Rudolph has kindly consented to become a Vice-President of the Society.

HERBERT E. CLARKE.

Presidential Address

Plant Ecology

By Ernest Chambers, F.L.S.

(*Delivered before the Society on Oct. 27th, 1951*).

> " The standing objection to Botany has always been that it is a pursuit that amuses the fancy and exercises the memory without improving the mind or advancing any real knowledge : and when the science is carried no farther than a mere systematic classification the charge is but too true. But the Botanist who is desirous of wiping off this aspersion should be by no means content with a list of names : he should study plants philosophically and should investigate the laws of vegetation. Not that system is by any means to be thrown aside —— without system the Field of Nature would be a pathless wilderness —— but system should be subserviant to, and not the main object of, the pursuit. "
>
> Gilbert White, Selborne. June 1778.

The subject, Plant Ecology, is enormous and I can only hope to outline its principles and indicate paths for more intensive study. The word, of course, is Greek, meaning a study of the home or dwelling-place. Plant Ecology covers an investigation into every factor, organic or inorganic, which goes to make the habitat of a plant, a type of plant, or a community of plants. It is evident that the subject falls into two interwoven sections, to study 1) the development and establishment of a habitat and 2) the types and succession of vegetation which inhabit it. In a hand flora, the habitat indication must be brief, but the brevity may lack clarity : e.g. " Woods " may be given, but the "woods" may be Coniferous or Deciduous : if Deciduous, may be Beech, Ash, Birch or Oak, etc. : if of Oak e.g. may be *Quercus robur* or *Q. sessiliflora,* with differences in soil and physiographic conditions, and if of either, may be closed or coppiced, with variation in ground vegetation.

Before study of the factors which design a habitat, I will describe one, the evolution of which as a Plant Community was under my observation for 18 years. This outline will serve as a text for more ample detail.

In 1900, Dr. J. H. Salter recorded a clump of *Glyceria maritima* on the flat of the Dovey Estuary. During the next 8 years this accumulated enough silt and detritus at its eastern end to form a small salt-marsh community and, at its western end, a small hump of blown sand. When I saw it in 1908, this little habitat was about 12 yards in length and taking shape. The flat eastern surface was bound by patches of *Glaux maritima, Sagina maritima, Armeria maritima,* with *Salicornea annua* on their margin. The area was being extended by rhizomes of *Carex arenaria* which gave a roothold for *Agropyron junceum* and the first clump of Marram (*Ammophila arenaria*). Subsequent development was constant — floods and ebb-tide bringing down floating debris of land vegetation and seaweeds, whilst blown sand built the western end, filtered by the Marram and secure on the foundation of its roots and stolons. During 4 years, the salt-marsh types shewed the greater development. In 1912, a small bank of *Aster tripolium* and *Triglochin maritimum* formed the tail. The higher portion was building up but had, as yet, no settled surface. By 1918, the habitat was preponderantly a dry sand-dune of Marram and *Elymus arenarius,* both structurally able to bind the sand into permanency. Disintegrated sea-shell and jetsam made possible the appearance of *Cakile maritima, Salsola kali,* the Orachs *Atriplex hastata* and *A. laciniata* near tide-mark whilst the growing stable surface bore *Calystegia convolvulus, Sedum acre, Phleum arenarium, Euphorbia portlandica* and *E. paralias.* During the next 8 years, the dry sheltered surface shewed *Lotus corniculatus, Thymus serpyllum, Polygonum aviculare, Festuca* spp. and *Centaurium littoralis.* By 1926, *Arctium lappa* and *Cynoglossum officinale* indicated that rabbits visited the new dune. The advent of *Rosa spinosissima* and *Ononis repens* was the first sign of shrubby vegetation. In the slack of the dune, some salt-marsh flora persisted.

This summary shews the progressive formation of a habitat and its plant association and some of the governing factors.

Although interwoven, the conditions which design plant form may be divided into four main factors : 1) Edaphic — pertaining to the soil and its origin; 2) Physiographic — governing the development of the soil surface; 3) Climatic; 4) Biotic — covering the effect upon the plant by other plants and by animals, including Man.

Edaphic. The importance of the soil, its texture, chemical composition, soil water, soil air and organic matter in the superficial layer available for plant nutrition, is well-known to an agricultural community, and the study of Soil Science is now at a high level. The texture of the soil i.e. the variation in size and composition of its particles, determines its water content. Gravels and sand allow excessive aeration and evaporation and their rapid drainage causes the leaching of all substances in solution or fine suspension. Stunted or deep-rooting plants result. With conditions aggravated by dry atmosphere, the Desert flora consist of well-protected plants of slow growth making little demand upon the soil, and of rapidly developing annuals which germinate and flower quickly after infrequent rain. Silt is composed of still smaller particles and is able to absorb and retain water, but, like sand, consists only of insoluble chemically inert particles. In all these, there is little or no formation of Humus. Clay is largely of secondary origin and, being colloidal in nature, can retain a large proportion of water. Its particles are very minute, but flocculation (e.g. by the addition of lime) aggregates it into compound particles and allows water and air to permeate it. The texture of soil thus determines the amount of available water, 1) that used by soil colloids in moisture swelling, and 2) the water held in suspension and in fine capillary movement according to the degree of saturation and size of particles.

The natural fertility of a soil is in proportion to its content of the result of decay of organic material of past generations of plants, whose decomposed tissue has been broken down into more or less unrecognizable form by the action of Soil Bacteria. Such matter is termed Humus, but its eventual form varies according to the texture of the soil upon which the decomposition took place, the degree of humidity and the temperature of the air. In favourable conditions of moisture and well-aerated soil, with the presence of available calcium, there is a complete oxidative decomposition. In aerobic conditions, with further action of earth-worms, the result may be the brown earth of high basic content such as that which has followed the deciduous forests of Europe and constitutes our best farm lands. The effect of humus can be well seen where good deposits occur in sterile surroundings. A good example is on the edge of Denny Lodge Inclosure, where tall clumps of Bracken stand conspicuously above the general level of the society. These clumps mark the decomposed remains of tree roots. Excess of water causes an anaerobic condition, excluding earth-worms and required bacteria, and prevents complete decay. The result is Peat, in which much of the plant structure is recognisable. In peat-moss bog conditions, with an absence of bases, there is a continuous development of acid humus with its distinctive flora. Humification also takes place in cold climatic conditions, especially on non-calcareous rock, and produces moorlands as those of Devon, N. England and Scotland. Even on high exposed limestone tables there is peat formation and, where bare rock and peat pockets alternate, results in calcicoles such as *Helianthemum* growing alongside acid-loving heath plants. Peat formations are perpetuated because the leaves of heaths and conifers which exist upon them are deficient in bases and structually not easily decomposed. The accumulation of humified material of acid reaction deepens. Within it are preserved intact such organs as pollen-grains, scales etc. and thus the floral history of the area may be read. Fen peat, a neutral humus, is formed where waterlogging alone prevents the oxidative decomposition, for which conditions would otherwise be favourable.

The Physiographic factor is largely a link between the Edaphic and Climatic, but covers many conditions which bring about important modifications of both. Erosion may have the dual effect of exposing new surfaces and of silting up lakesides or drainage in river basins. There results a loss of soil in higher areas and no gain at low levels, where water-logging and probably excessive acidity occur. In dry areas, erosion plus wind take away light soil and leave desert conditions and dust-bowls. Landslides and overspills make local changes in the flora. Examples occur on the steep sides of Yorkshire Dales, where acid moss-peat slides down and forms a new community among the denizen calcicoles. Altitude operates as a factor through its climatic effect. Even in Britain, zones can be observed. In mountainous tropical countries the contrast is very marked as, within a short distance and with approximately the same sunshine and mid-day temperature, luxuriant vegetation flourishes below, whilst at the snow-line the dwarf *Azaleas* and Ericaceæ resemble our own heath flora. Special adaptations are seen in Alpine plants, which are covered with snow for the major portion of the year and must utilise every hour of light. *Soldanella* is already in bud when uncovered and many flower after a few days of exposure. The action of Wind is seen in the horizontal growth of trees on wind-swept coasts and hillsides and the varying height of trees on the windward and leeward sides of plantations. A hot desert wind accentuates all the ills of drought with its desiccating effect. On the other hand, wind assists the formation of a sand dune. Local topographic features provide a variety of habitats within a small area : thus, a rocky shoulder may have alpine plants upon it, whilst bog, or other, flora grow in its shelter. The lie of the land may cancel out the effect of many degrees of latitude.

The Climatic factor in its widest interpretation of Tropical, Temperate and Arctic, has an influence over-riding all others. In a more local sense, its effect is mostly in terms of humidity and light. The fairly constant average rainfall, great or small, is reflected in the typical vegetation of each area and shews in such a contrast as the Amazon Basin with the Sahara. The verges of many deserts e.g. Kalahari, would be fertile if given humidity, as shewn by the rapid growth of its flora after occasional rain,— a phenomenon also met with in Californian and other deserts. Spruce records that, within a month of rain near Santarem, he collected 90 species of Grasses. Low relative humidity causes high evaporation from a plant — as from the ground — and *vice versa*. The loss of moisture must not be greater than can be replaced via the roots, hence we have the large leaves in saturated air of most tropical forests and the scale-like leaves of Xerophytes of heaths and deserts. Humidity and temperature are fairly regular in Britain, but some plants which grow in the open in the South are found only in sheltered places in the North, whilst some species e.g. of Orchidaceæ, which tolerate various soils in the South, are only on chalk in the North. Variation of Light is of interest in our climate. With its dependence on light for photosynthesis (in other words, for its existence) a green plant has a limit to its tolerance of shade conditions, and the lay-out of such a community as a hedgerow is designed by the struggle for light. It is the prime reason for climbing habit, leaf-mosaics and the rosette form of so many herbs. The herbs of a deciduous wood generally develope and often finish flowering before the roof of foliage is complete.

The Biotic factor in Plant Ecology covers the struggle for place within an Association, and the widest and often unforeseen effects of contact with other living organisms ranging from Soil Bacteria to Man. The former have been mentioned under Humus. Mycorrhiza-forming mycelia of Fungi are necessary for the maximum nutrition of coniferous and many deciduous trees, Ericaceæ and other shrubby plants, and probably dependence on this Biotic co-operation is greater than at present known. Parasitic Fungi and Insects, on the other hand, wipe out whole societies of plants, especially those artificially created. Panama Disease of Bananas and Potato Disease, are examples of economic importance. The intrusion of an adverse biotic factor is illustrated in the loss of the Cacao industry by Surinam. Fifty years ago, there was a well-established association of plants consisting of a shade roof of *Bucare* etc., a lower tree growth of *Theobroma cacao* and a ground cover. This was a normal tropical forest habitat. A settled member of the Association was the Black-pod Fungus (*Phytophthora palmivora*), so it was decided to reduce the shade and control the fungus by letting in light and air; but also was let in a plague of Thrips (*Heliothrips rubrocinctus*). The weakened trees were attacked by the Die-back (*Monilia*) and finally by Witches-broom (*Marasmius perniciosus*), which completely destroyed the cacao. A similar fate is now threatened in W. Africa by the Swollen-shoot Disease, whose vector is the Mealy-bug. Rodents, especially rabbits, are a major biotic factor. Grazing animals may preserve or alter the balance. The prevalence of Whin on the New Forest open heaths dates from the loss of hairy muzzle protection of the forest ponies, which permitted grazing on the young shoots. The marked result of protection of a Beech plantation from animals was demonstrated to us by Mr. Wynne-Jones in Oakley Inclosure. Pigs are said to ensure forest rejuvenation by trampling in acorns and beech-mast. In contrast, the sharp hooves of goats are blamed for the surface desiccation of many hillsides in dry climates. One might even include the statement that the success of a Clover crop depends upon the number of spinsters living in the vicinity. The most important biotic factor is Man with his draining, irrigation and cultivation, felling and planting, destruction and propagation of plants. Farmer and planter strive to create the proper habitat for their crops, and are unsuccessful if natural factors prevail.

The Habitat prepared, the next step is its colonisation by plants and, whether commencing at zero or replacing previous growths, there is a succession of plant forms with the survival of the fittest, until a climax is reached with the dominance of those species able to make the greatest claim on all the available factors. Plant succession is in operation everywhere, as it has been throughout the evolution of plant life, and forms a good approach to the study of Ecology. Green Algæ on drying mud, or Mosses on bare surfaces, may be the first species in a long succession. A patch of sandy earth at Sloden Wood is in 1951 home of a community of the Moss *Polytrichum juniperinum*, which has formed a stable water-retaining surface. This and a little *Galium saxatile* upon it will die and provide humus for successors. With heath on one side and woodland on the other, the sequence may be a growth of *Calluna* and *Erica* in which Birch will appear and, as shade increases, the heaths will die and a normal wood undergrowth appear. Each stage of a succession is called a Seral Community. Here, the *Polytrichum* is a Primary Sere. The wood, if it eventuates, will be the climax. In our sand-dune the *Glyceria* was a primary sere and the Marram the Climax typical of a British dune in that area. In France, there might be a further succession of larger herbs shrubs of *Tamarix* and *Hippophœ* : and finally Pines and plants protected by them. A Primosere must be able to accept extremes of drought or moisture : in the former case a Xerophyte and in the latter a Hydrophyte. Upon the habitat made by these develop the Mesophytes normal to the area. The regularity of some Primoseres e.g. *Funaria* on wood ash, is somewhat of a mystery. St. Catherine's Hill and Hadden's Hill are present examples of plant succession, both being open communities. On parts of Hadden's Hill Birch and Pine are dominant over *Calluna*, which may die in their shade; but, in turn, Birch may be replaced by a climax of Oak or Sweet Chestnut. Burning of moorland starts a fairly regular succession. The components vary in depth of root system, *Calluna* and *Erica* being shallow and *Vaccinium* deeper. *Calluna* is partly destroyed and *Vaccinium* survives as a seral community. Ideal grouse-moor succession is that young *Calluna* springs up and outgrows the *Vaccinium*.

A Climax in plant succession is termed an Association, which may include many species but has dominants of the structure best adapted to the conditions e.g. wiry and scale-leaf habit of heaths and the reeds of swamps. Deserts and sand-dunes have two typical forms restricting transpiration in switch forms like Broom and Marram or storing water as in *Cacti*, *Sedum*, etc. Some Associations are complex in their stratification e.g. an Oak wood is the dominant, but within it are communities dependent on its shade and humus. Hazel may form a stratum and herbs another. *Dryopteris* and other Ferns : *Leucobryum*, *Hypnum* and many Mosses : *Boletus*, *Amanita* and other Fungi on the ground, and *Polypodium* with Bryophytes and Lichenes on the trunks are all parts of the Association. The stratified Association is even more complex in tropical forests. Within an Association may be a community of plants typical of some other habitat and denoting essential difference in soil or humidity. Such is termed a Society. A familiar example is a strip of *Erica tetralix* and *Narthecium* on an otherwise dry heath. A small area of stream bed on the edge of Holmsley Inclosure affords interesting research, thanks to its discovery as a calcicole community by Mr. E. C. Green and Mr. Francis Rose. I quote here freely from Mr. Green, " On reaching the stream which flows through an acid bog, I was intrigued to find the chalk-downs form of the moss *Hypnum molluscum*, and a closer examination revealed some yards of similar calcicoles, both phanerogamic and cryptogamic, to such an extent that Rose compared it with Fen communities . . . . Boring revealed the presence of a circumscribed area of oligocene shell deposit about 12″ down. The soil of the flush was a very grey calcareous peat with much raw calcium carbonate, and the Oligocene shell bed was visible in the stream bank with obvious chalky shell fossils. Rose says he has seen vegetation like it in the Fens of E. Anglia but not before anywhere in the South. *Hypnum intermedium* and *Preissia quadrata* are new to Hampshire. The pH of the *Preissia* substratum was 7·6, i.e. strongly alkaline." Rose and Green have made available a list of 20 Phanerogams and 10 Cryptogams from the streamside vegetation, the vertical banks and grazed flush alongside.

Sand-dune and Salt-marsh Associations are already mentioned. As they occur in many temperatures the climax vegetation differs very considerably. In the former, the tropical climax may be Sea Grape (*Cocoloba uvifera*) or even Coco-nut (*Cocos nucifera*), and in the latter are extreme cases e.g. Mangrove which is exclusively dominant.

Heath Associations inhabit stretches where a shallow acid peat covers dry sandy or gravel soil. In high parts of Exmoor and Cornwall it may be a climax. On many areas in the North it is the end of a successive degeneration from Oak forest, through Birch and Pine to Heath, with the original soil changing to a podsol. The dominant forms are *Calluna* and *Erica cinerea*, with local societies of *Ulex* and *Genista* spp.. *Vaccinium* exists as a dwarf. There is often a gradation from heath to mountain grassland of *Festuca ovina* and *Agrostis* spp. with Crowberry and Cowberry. At higher altitudes are *Alchemilla alpina*, *Lycopodium selago*, *L. clavatum* and *L. alpinum*.

Thicker deposits of peat in a moister habitat are also dominated by *Calluna*, but *Erica cinerea* gives place to *E. tetralix* and Cranberry (*Oxycoccus*) and in open spaces are Cottongrass (*Eriophorum* spp.), Deer-grass (*Scirpus coespitosus*), *Nardus stricta* and *Molinia*. *Gentiana pneumonanthe* and *Orchis latifolia* are typical.

Still wetter conditions of peat with acid water constitute the true Bog where *Sphagnum* is often a complete cover carrying

Droseras, Pinguicula, Narthecium, Oxycoccus, Bog Sedge (*Carex limosa*) and Bog St. Johnswort (*Hypericum elodes*). Sweet Gale (*Myrica gale*) is the bog shrub. In acid water with *Sphagnum* are Bladderworts (*Utricularia* spp.), *Scirpus lacustris* etc., Plants in the acid peat associations demonstrate in their structure the deficiency of bases, even to the extent of driving some to insectivorous habit.

The Fen Association differs from a peat-moss bog in that its free water originates in strata richer in bases and is therefore able to support a more luxuriant vegetation. The Sedges, represented by their largest species Tall Sedge (*Cladium mariscus*), Bulrush (*Scirpus lacustris*) : Grasses by *Phragmites vulgaris* and *Phalaris arundinacea,* together with Yellow Flag, Sweet Flag (*Acorus calamus*) and Reedmace (*Typha latifolia*) : all contrast with the impoverished vegetation of the acid bog. Humification of Fen vegetation produces a neutral peat. Silting and draining of Fen-land may develope communities of Alder and Willow.

The edges of Fen and areas of defective drainage on low-lying land and river and ditch banks form the Marsh community, but it has so many gradations from semi-aquatics to damp meadow flora that it cannot be classed as a distinct Association.

Woodland is the climax over the greater part of Europe, but edaphic and climatic factors produce a great variation in its constituents. In the North of Britain and on soil deficient in bases are the Conifers. On deep soils of sand and clay in the South and Midlands and the glacial drifts of Yorkshire and Cheshire *Quercus robur* is the dominant, with undershrub of Hazel etc. . *Q. sessiliflora* is dominant on shallow silicious soils of the Welsh hills and the Pennines, with *Vaccinium* as undershrub. In both, the humus supports a rich flora of herbs and fungi. Above the highest *Q. sessiliflora* (approx. 1,000 feet) are Birch and Rowan. Birch may form consociations there, but at lower altitudes is generally only a seral community except on very acid soils. Beech and Ash are locally dominant on calcareous soils. An example of the intolerance of Beech to acid conditions is seen on the edge of Matley Bog. Yew, which needs protection of scrub in its early stages, and Sweet Chestnut on deeper soils, are other examples of "consociations." The New Forest, with its natural, semi-natural and planted woodland, makes a good local approach to the study of all the ecological factors.

Members of the Alpine Associations are characterised by their tough root-system, low vegetative structure offering little resistance to wind, and a rapid and relatively conspicuous floral development.

It must be stressed that, whilst many plants are confined to the typical habitat of one Association, others are tolerant, or may even be typical of different Associations in different climatic conditions.

Finally, a word on the application of Plant Ecology. Much of the land in Britain is under cultivation or afforestation and the consociations (and a field of corn or a plantation of spruce is a consociation) are decided by artificial demands and not by the rules of Plant Ecology. (Oats will not grow on acid soil at 1,500 feet altitude by Act of Parliament — though I have seen the attempt). But knowledge gained through careful observation of small areas here is the starting point for ecological survey of virgin lands available for the growth of plants of food and other economic value, especially in the Tropics. The first step in such cultivation is usually the felling of forest and the subsequent planting of Maize, *Tannia*, *Cassava* or Plantains to replace the existing ground cover; and then the development of shrub (of Coffee etc.) and small trees (of Cacao etc.) and their tall shade trees is only a reproduction of the succession of herb, shrub and tree as seen in our own woodlands.

It is for the Plant Ecologist to decide on the areas where the edaphic, climatic and biotic factors are likely to be favourable to the establishment of the cultivated plants as consociations or even stable climaces. Practical knowledge of Plant Ecology is often shewn by land-dwellers and some otherwise backward peoples in linking up the best habitat of a wild plant species with that of a desirable crop. One has met such unexpected observation, for example, in the statement, subsequently proved correct, that *Cacao* will thrive on ground occupied by *Musa maritima* and that where *Camoruco* grows is good Coffee land. Pioneer agricultural development should therefore be preceded by careful ecological study.

Probably the most pressing problem of our time is the nutrition of the increasing population of the world. Given reasonably peaceful conditions in the meantime, I venture to predict that, a century hence, the evaluation of every science will be directly as its contribution to production of food. As, in the ultimate, all food is of vegetable origin, the science of Botany must bear the burden. The Bio-chemist and the Geneticist will play a great part, but the selection of the habitat is the responsibility of the Plant Ecologist.

Agriculture and Population in Prehistoric Bournemouth

By J. BERNARD CALKIN, M.A., F.S.A.

The object of this short paper is to put on record the evidence for the local practice of agriculture in prehistoric times, and its relationship to the problem of population. The area under review extends from Highcliffe in the east to Hamworthy in the west. To the north it includes the Stour valley as far as the edge of Cranborne Chase just above Wimborne, and the valley of the Avon below Tyrrell's Ford.

The writer has recently had the opportunity of examining the large Druitt collection of archæological material, now in the Red House Museum at Christchurch. Until this material became available for study, there was always the risk that any general expression of opinions on local archæological problems might prove to be premature.

At the outset, it should be borne in mind that the predominantly acid nature of the local soil makes it an extremely poor medium for the preservation of antiquities. Nearly all those surviving consist of pottery or stone, with an occasional object of bronze. Human remains have completely perished, except for such bone fragments as have become calcined by cremation. In chalk or limestone regions, on the other hand, ordinary implements made of bone or iron are normally well preserved. Consequently the study of Early Iron Age and Roman sites in the Isle of Purbeck enables us to infer that contemporary sites around Bournemouth also contained such objects as bone pins and weaving combs, iron nails, keys, etc., though no trace of them survives at the present day.

The art of agriculture seems to have evolved in the Near East some 8,000 years ago. After a gradual dispersion, it probably reached these shores about 2,500 B.C., being introduced by a people known to archæologists as Neolithic A. They are familiar to many readers as the earliest inhabitants of Maiden Castle. It may well have been some immigrants from that area, who sailed up the Channel to settle in the country around Christchurch Harbour. Their characteristic pottery has been recognised at four local sites.

At Whitehawk Camp, Brighton, actual impressions of grain were found on a sherd of Neolithic pottery. The local evidence for cultivation is of a more inferential nature. A pit exposed during 1946 in the face of the cliff at Southbourne proved to contain numerous flint flakes, including knives and serrated blades, and several specimens of Neolithic pottery [1]*. Such pits are thought to have been made for grain storage. When they could no longer be used on account of vermin or mildew, they would tend to become filled up with any refuse that was

* See References on page 55.

lying in the immediate neighbourhood. It is likely that two other pits formerly exposed on the north side of Sea Road, rather less than a mile further west, also served the same purpose. One of these also contained flint flakes.

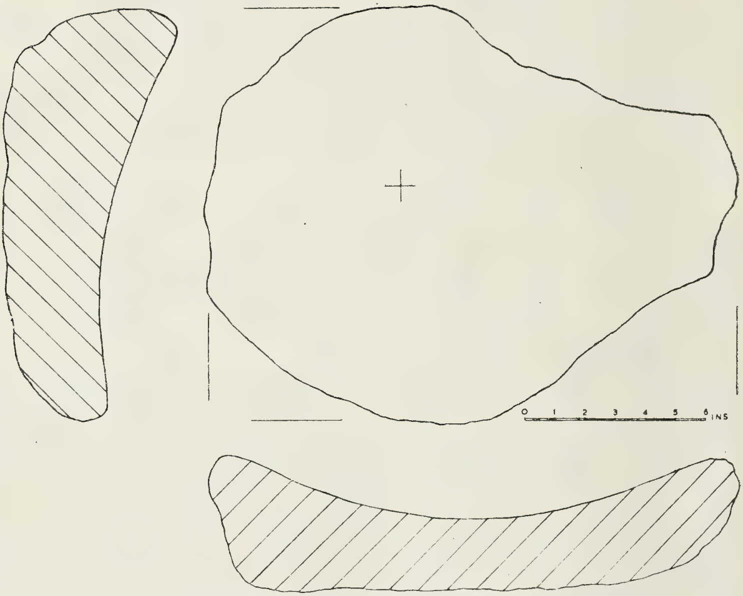

Fig. 1. Neolithic grain-rubber found at Charminster.

Another piece of evidence consists of the quartzite or sandstone grain-rubber which was found in North Cemetery, Charminster, in 1927, and was presented to our museum by the late J. H. Scott. It measures 17.5″ by 13.5″ and is about 4″ thick. One surface has been ground quite smooth, apparently by rubbing a bun-shaped pestle over it with an approximately circular movement, so that the centre has been worn 1.95″ lower than the ends, and 1.1″ lower than the side edges (see Fig. 1). This hand-quern closely resembles two which were found in a Neolithic context at Maiden Castle [2].

No flint sickle blades showing the characteristic corn-gloss surface have so far been identified, but there is another class of flint implement, known as a pick or a hoe, which may sometimes have served as an agricultural implement. Some eighty-five of these are known from our area, rather more than half coming from the lower ground of the Stour valley. They fall into two groups. Some 80% are sharp, and black or grey in colour, whilst their cutting edges have been formed by striking off a flake laterally (tranchet blow). Had they ever been used for hoeing, it seems almost certain, in view of the stony nature of the ground, that their edges would show more signs of damage. The remaining 20% are somewhat longer, averaging 7in., against 5in. in the first group. They are more roughly made and often show a bruised and weathered appearance. Some have become patinated yellow or brown. Possibly these were hafted and used like a modern hoe.

Thus, though the evidence is not conclusive, it seems probable that the local Neolithic A settlers made some attempts at corn growing.

Whilst hoe cultivation would have been profitable on the fertile soils of the Nile and Euphrates valleys, it must have proved a slow and arduous task even on the lighter soils of western Europe. So it is not perhaps surprising to find that, during our Early and Middle Bronze Age, the farmer largely gave place to the herdsman. It is also evident that, in our own locality, the inhabitants had to rely on wild game to supply a considerable part of their diet. Proof of this is shown by the discovery of some 500 flint arrowheads of various types belonging to the Neolithic and the Bronze Ages. By way of contrast, the richer arable and pasture lands of Salisbury Plain and Cranborne Chase seem to have provided food in plenty, and it is extremely rare to find arrowheads in either of these districts.

The arrival from overseas of new immigrants familiar with the ox-drawn plough marks the opening of the Late Bronze Age. The use of the plough had naturally brought about a great increase in tillage, and this in turn led to a rise in the population. The unsettlement in Europe is reflected by the number of refugees who crossed the channel in search of new lands. Whilst a few immigrants appeared in Sussex somewhat earlier, the chief landings on the south coast were made in the neighbourhood of Weymouth and Christchurch about 750 B.C. [3].

It is instructive in our own area to compare the number of recorded burials of the Early and Middle Bronze Age with that of the Late Bronze Age. The Early period is represented by fifteen beakers, and the Middle by thirty cremations, making a total of forty-five. On the other hand, the number of Late Bronze Age crematons is probably in the neighbourhood of four hundred and fifty [14]. Now the two earlier periods extended roughly from 1900 to 750 B.C., a space of some 1,150 years, whereas the Late Bronze Age lasted little more than 350 years. Allowing for this difference in duration, and assuming other things to be equal, the figures suggest that the population increased to something like thirty times its former size!

Habitation sites of these early ploughmen are extremely rare in the Stour valley as elsewhere, the only recorded finds consisting of two cylindrical clay loomweights and a few potsherds from the south side of the bridge in New Road, Ensbury, and a small similar loomweight from Hillbrow, Pokesdown. At this period it was customary to grind corn on a saddle quern. This consists of a lower stone, generally oval-shaped, on which the upper stone was pushed forward and back. It is a matter of considerable surprise that hardly any of these have been recorded locally, especially when it is recalled that Herbert Druitt was well known as a collector of antiquities to a large number of gangers and labourers employed in road making and gravel digging in the Christchurch and Bournemouth area. He encouraged the men to bring him any kind of unusual-looking object, and was prepared to purchase quite worthless material, rather than run the risk of damping the enthusiasm of his clients. We are however only able to record one saddle quern from Hengistbury [4] and two rather doubtful specimens from Seafield Road, Southbourne, and Barrow Plot, Wick Lane. Bronze sickles also appear to be unknown in this region. These circumstances suggest that agriculture may locally have been practised only on a restricted scale. Perhaps the yield was too small to make it profitable, On the other hand, Mr. J. H. Lavender has suggested that as barley was probably the main crop, the corn may have been eaten in the form of porridge.

Nature offered these people a more favourable environment on the chalk downs. Such lands reach down to the channel a few miles to the east of Weymouth harbour, and extend in a great arc round Dorchester to the uplands of Cranborne Chase and the broad sweeping downs of Salisbury Plain. Further east, along the coast, lay the dangerous and uninviting cliffs of the Isle of Purbeck, but on rounding Hengistbury Head safe anchorage was to be found in the sheltered waters of the Stour-Avon estuary. From Christchurch ancient trackways along the Stour and the Moors river, first cleared by man more than a thousand years earlier, gave the new immigrants easy access to Cranborne Chase. The Avon valley as far as Fordingbridge seems to have been little used, probably on account of its liability to flooding.

Cranborne Chase is rich in evidence of cultivation during the succeeding period of the Early Iron Age. Field boundaries known as lynchets are a familiar sight, whilst the farmsteads of these people are riddled with pits, where the corn was stored for use in winter. A few such pits have been exposed in gravel workings on two different sites in the parish of Corfe Mullen, south-west of Wimborne. A pit at Sleight yielded remains of several bowls and jars referable to the 3rd or 2nd century B.C. About 1927 gravel excavation in the Railway Ballast Hole at East End exposed two storage pits still full of grain. Unfortunately no competent observers saw them, but careful inquiries made in 1929 indicated that they were oval in plan, about six to seven feet deep, and probably lined with clay. Samples of the blackened grain were sent to the Cambridge School of Agriculture, where Prof. R. H. Biffen reported that they consisted of varieties of wheat and oat similar to those found on other Iron Age sites in this country (see Plate 1A). It was customary to scorch the grain slightly before storage, to prevent sprouting. Apparently grain

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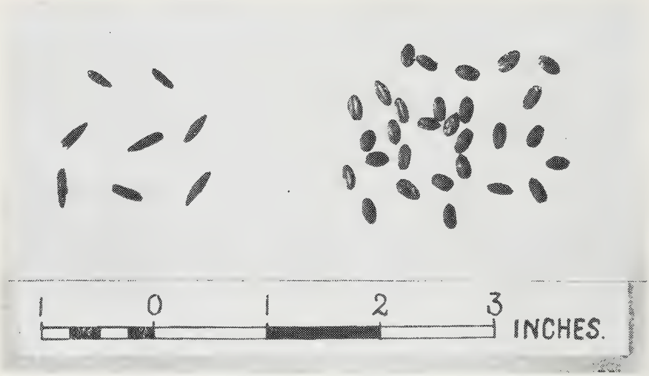

Plate IA.—Grains of oat and wheat from an Iron Age storage pit at East End, Corfe Mullen.

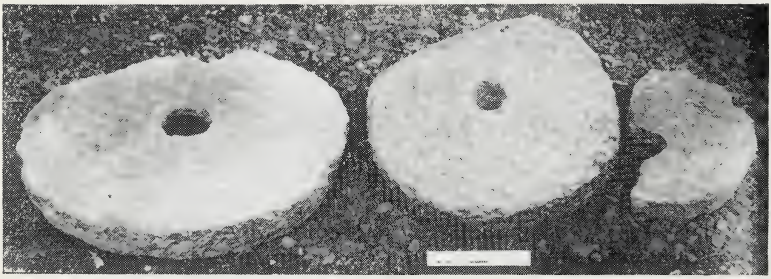

Plate IB.—Rotary querns. (*Left to right*) Purewell, Christchurch; Gallows Gore, Worth Matravers; East End, Corfe Mullen.

The above may be seen in the Red House Museum, Christchurch.

so treated will slowly carbonize when left in the ground, and thus be preserved.

The gravel pit last described marks a site much frequented in prehistoric times. To-day it is derelict, most of the ballast having been worked out. The gravel itself has yielded about 180 palæoliths [5]. Next we have a Neolithic dug-out hut [6] and two late Bronze Age urns. About 25 A.D. the presence of Belgic settlers is indicated by a considerable scatter of their black domestic pottery. The Roman road from Hamworthy to Badbury Rings and Old Sarum, which was probably constructed during the early years of the occupation passes within a hundred yards of our site, which thereafter seems to have been continuously occupied until the fourth century. Another road running east must have joined the former, either here or a short distance to the north [7]. In 1932 an interesting relic of this period came to light in the form of a pottery kiln, containing the remains of some two hundred vessels dating from the 3rd quarter of the first century. The pottery series included native copies of imported Roman jugs, and an early form of mortarium [8]. The grain storage pits belong in all probability to the Belgic period, and it is possible that the site was abandoned in a hurry on the approach of Vespasian's army.

Field lynchets have not been identified at Corfe Mullen or anywhere else in our area, but such negative evidence is of little value, as these slight surface features would in all likelihood be more rapidy eroded on a gravel subsoil than in chalk country. Chemical reactions of the soil are doubtless responsible for the fact that no iron sickles of ploughshares have survived.

During the later part of the Early Iron Age an improved quern of rotary type was introduced. In this the upper stone, provided with a projecting side-handle, was made to revolve on a central wood pivot fitted into the lower stone. Early varieties tend to be thick and squat, whilst some of the later Roman examples are larger and thinner. Both types occurred at Hengistbury [4]. Rotary querns have also been recorded at the Ballast Hole, Corfe Mullen and at Hamworthy [9]. Fragments of several of the later variety were found at Mill Plain, Christchurch, whilst a good example of a lower stone (see Plate 1B) turned up on the Burton housing estate, Christchurch, in 1947 [10]). Most of our rotary querns consist of Greensand or Tertiary sandstone. There is a larger Roman variety, which owing to its great weight, was worked by donkey power. A complete example from Hamworthy is now in the British Museum [11], whilst fragments of another were found at the Corfe Mullen site. These are made of Niedermendig lava, and were imported from the Rhine.

Much of our district doubtless consisted in ancient times of open heathland with ling and bracken, interspersed with scattered groups of oak and ash. In spite of the natural poverty of the soil, Neolithic man seems to have made some attempt at hoe cultivation, but there is little indication that even the Late Bronze Age plough gave an adequate return for man's labour. The relatively large number of rotary querns, amounting to eleven, as well as 'a fair number' from Hengistbury, is probably to be connected with the arrival of a new type of heavy plough fitted with wheels, first introduced, it is believed, by the Belgae, early in the Christian era.

The population in Neolithic times must have been considerable. As many as one hundred and twenty-five flint axes have been recorded, as well as twenty-three made of stone. Nearly all the latter have recently been examined microscopically by a special Sub-Committee of the South-Western group of Museums and Art Galleries. Their investigations throw interesting light on one feature in the organization of ancient society, for they reveal the earliest known examples of trading between different parts of Britain. Three of our axes have been recognised to be of Cornish origin, four come from the Lake District and one from North Wales. Another is made of spotted dolerite, the same material as the famous blue stones, which derive from Pembrokeshire, and now form part of the monument at Stonehenge. There must have been a substantial local market, for these various axes to have been brought from so far afield.

The sharp rise in population during the Late Bronze Age has already been noted, but the contents of the local barrows, of which there were formerly about one hundred and thirty-seven or more, show few signs of material prosperity during any part of the Bronze Age. The remains found at the Iron Age port of Hengistbury were almost as disappointing in this respect.

Doubtless the Stour pastures supported many herds of cattle, whilst the Bronze Age loomweights already mentioned, as well as the Iron Age specimens from Hengistbury [4] and Ensbury Park [12] point to sheep grazing. We have seen that the food supply during the Neolithic and Bronze Ages was supplemented by hunting, and also presumably by fishing.

It would seem that with the greater agricultural activity of the Late Bronze Age, it became common knowledge that far richer lands lay a few miles to the north-west, and so our own district was more and more regarded as a corridor, providing a port of entry and a highway to the interior. Of the twenty odd Iron Age sites† so far recognised, every one lies within little more than a mile of the river Stour, and no settlements of any size are known outside Hengistbury. By way of contrast, antiquities referable to the Neolithic and Early Bronze Ages are found widely distributed over the area represented by the present borough of Bournemouth [13].

If this view of the dwindling importance of the Bournemouth region is correct, we can more readily understand the new developments carried out under Roman direction. Attention was concentrated on Hamworthy, which like Hengistbury appears from the coin evidence to have been a former trading station for Carthaginian ships [15]. Here a new road was constructed, running northwards along a prehistoric trackway, behind Poole Harbour, and heading for the Stour just beyond Wimborne. The Romans were ever of a practical nature, and we find that compared with the former route up the Stour valley, the new road just halved the distance to Cranborne Chase. Both the donkey-mills come from sites along this road. Hengistbury's days were numbered. It had served its purpose, and if proof is needed of its neglect by the new administration, it may be seen in the fact that as late as 150 A.D. it still had a native currency of its own.

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† The more important sites mentioned in this paper have been marked on the set of six inch O.S. sheets in the Society's library.

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Plant Life in the Hampshire Rivers

By W. J. READ, M.Sc., F.R.I.C.

Few people realise the importance of plant life in relation to our rivers. Many of us have memories of glorious patches of water lilies and of small streams brilliant with the white stars of the water crowfoot, but few have considered the specific rôle of these plants in the economy of nature, and fewer still know of the problems and difficulties caused by excessive growth and in some cases by the lack of growth.

First let us consider the part played by these water plants in a river and in doing so we will limit ourselves mainly to the submerged and partially submerged plants. All green plants grow by photosynthesis, that is to say, that under the influence of light they absorb carbon dioxide and liberate oxygen. If they grow under water this oxygen is dissolved in the river water and the presence of plenty of dissolved oxygen is one of the necessities for fish life. This is not of course the only source of dissolved oxygen, as much is absorbed from the air, especially when the stream is agitated by rapid flow, by passing over weirs, etc. As the streams become slower and more tranquil the plant growth generally increases and becomes a more and more important factor in the oxygenation of the water. This production of dissolved oxygen is one of the important activities of plant life in rivers.

The next activity is slightly more complicated—decaying matter is continuously acted on by bacteria and other microscopic life, resulting in the production of carbon dioxide which becomes available for the plant life. This combined action forms a type of life-cycle, and when a clean stream is polluted with sewage, provided this is not excessive, there is a gradual self-purification owing to vegetative and animal growth, and this self-purification is vitally important. When, however, the water is made too foul to support ordinary vegetation then changes are slower and a whole cycle of changes takes place before self-purification can become effective. Many of these changes are anaerobic and take place under conditions incapable of supporting the normal life of the stream, and it is not until these changes are complete that the stream shows any signs of recovery.

Another important factor is that vegetation forms a nidus for insect life and without weeds there is no hiding place for insects, nor places for them to lay their eggs; this is specially important in considering the hatch of fly—one of the most important of trout foods. The preservation of active insect life is of considerable importance and quite a lot of work has been done to improve the smaller water life in trout streams.

One other point has to be considered and that is that excessive growth of weeds restricts the flow of the river and causes flooding—consequently the weeds must be cut from time to time to give a clear flow and avoid flooding. How to maintain a satisfactory flow and still maintain sufficient weed for insect life and self-purification is a problem. Removal of the weeds necessitates removal of the adhering insect life and eggs and thus much food is lost to the fish. These considerations are mentioned to show the difficulties in the practical control of weed growth in rivers.

Having briefly considered the uses of weeds, we must realise that all weeds are not equally satisfactory. Some grow too rampantly and die off or rot, with disastrous results, others trap silt and cause other difficulties. Many die off during the winter, while others maintain a certain amount of foliage throughout the year.

Some weeds will grow only in limey or alkaline waters, others prefer acid and peaty water.

There is considerable variation in the acidity or alkalinity of the streams in Hampshire. The measurement is usually carried out by determining the hydrogen ion concentration or pH. Compared with the neutral point of pH 7.0, most of the chalk streams are akaline, with a pH of about 7.8. The peaty streams of the New Forest are acid and generally give a figure of about 6.0, although even more acid waters are found. These acid, peaty waters are generally deficient in mineral salts and weed growth is scanty; *Potamogeton polygonifolius* and *Myriophyllum alterniflorum* are two of the most characteristic plants. Growth in the alkaline waters of the chalky streams is much more profuse and *Potamogeton densus* is an example of a type only found thriving in the more alkaline waters. There is no doubt whatever that the flora in the two types of stream are distinct and characteristic, but how far this is due to the alkalinity and how far to the presence of lime and other mineral salt is perhaps a moot point.

All these facts must be considered when determining the most advantageous flora for a river; for I must stress the point that although the appearance is so natural, there is definite weed control and in many cases actual planting of the more desirable weeds.

The most famous case of an undesirable weed is the introduction of the Canadian Pondweed (*Elodea canadensis*). It first appeared in this country about 1840 and in the next 30 years its growth was so prolific that many streams were almost solid with it. Gradually this dominance decreased and although it is still a nuisance it is now relatively under control.

I will now deal individually with a few water plants, ignoring completely botanical arrangement, and consider them roughly in order of their importance.

I suppose the various types of water crowfoot or *Ranunculus* deserve the first place. The two most important in these rivers are the *R. fluitans* and *R. pseudofluitans*. *Fluitans* flourishes in the Avon and the quantity and size of the plants must be seen to be believed. It has no floating leaves and the under-water leaves are lank and flowing. It is a good plant for insect life and is generally preferred over all other plants. The *pseudofluitans,* on the other hand, is characteristic of the Test and Itchen. It has a more compact growth, with bushier tassels. It is supposed to have floating leaves in addition, but these are rarely found in the swifter streams partly due no doubt to the trimming of the weed banks by the river keepers. Seen in masses in the shallower streams its foliage is very attractive.

R. circinatus is a smaller type, with small, rigid underwater leaves the elements of which form a circular group in one plane. This is frequently found in the Avon near Bickton Mill, and at Ibsley, generally in the more sluggish reaches.

R. hederaceus and *R. peltatus,* with their floating leaves, are more frequently found in stagnant water and shallow stretches and are quite common. They flower freely, and with their white flowers brighten up many a small tract of water.

Among the other *Batrachian* species I have found *R. drouettii* at Wick, a very choice and delicate type, quite small and very attractive.

The Starworts are useful in water not too deep, and the general type is *Callitriche stagnalis,* which is common in all the chalky streams. *C. intermedia* is not uncommon and in my opinion is more likely to be found in the less alkaline or even acid streams in the area.

The *Potamogetons* are a host in themselves and vary from one another widely. I think the choicest is the *Potamogeton densus,* with its opposite leaves, bright green colour and bushy habit. It grows freely in the Test and Itchen and the Upper Avon, and also in the River Allen. It seems to prefer a chalky type of stream. Following the dredging of the Allen in 1949 a considerable growth of *P. densus* appeared in the tail race at Longham Pumping Station. It will be interesting to see if this persists, as *P. densus* is rarely found in the Lower Stour, although it is common in the Schreen Water, a tributary of the Upper Stour joining at Gillingham. Recent inspection show that it has practically disappeared.

Potamogeton lucens is a common type in the Lower Avon and is so prolific that it may conceal some of the less common types. Always seen above Knapp Mill. Found also in the Test above Romsey, and may be considered one of the commonest in the deeper silted streams.

Potamogeton perfoliatus—common in the Lower Avon at Knapp Mill. Frequently found in the Stour and many other streams. It is widely distributed.

Potamogeton pectinatus is quite common and found in quantity in the Lower Avon from Sopley to Christchurch.

Potamogeton natans, the common floating pond-weed, is more frequently found in ponds and stagnant water than in rivers, but the Wool River at St. Leonards generally shows profuse growth, as does the carrier from Bear Cross to below Kinson Church.

Potamogeton polygonifolius is generally smaller than *P. natans,* but closely resembles it and is found in the acid streams of the New Forest where it is widely distributed.

Potamogeton crispus, the curly pond-weed, is widely distributed but not really common. The most profuse growth found was in the Ebble, 100 yards below where the Fordingbridge-Salisbury road crosses. It has been found in the Mude, well above Somerford bridge, at Botley Grange, in the Upper Allen and at Knapp Mill.

The *Potamogeton pusillus* Group is somewhat difficult and I have found *P. berchtoldii* the commonest; this has been identitfied for me on several occasions by Dr. Taylor. It has been found at Ibsley on the Avon and at Bear Cross, and in the Test above Whitchurch. I have never been able to confirm *P. acutifolius* or *P. obtusifolius.*

Zannichellia palustris, or the horned pond-weed, is fairly frequently found and easily recognised from its characteristic seed pods. In the Bourne at Upper Gardens; in the Avon at Ibsley; in the Anton above Fullerton; and in the River Iwerne at Iwerne Minister. It is much more common than generally realised.

Myriophyllum spicatum is the commonest type and can be found in the Avon at Knapp Mill and at Ibsley; in the Stour near Longham and at Hampreston.

Myriophyllum alterniflorum is found in the acid streams of the New Forest and can always be seen where they cross the Bournemouth-Lyndhurst Road.

I have not found *M. verticillatum.*

Ceratophyllum demersum (Hornwort) is occasionally found in quantity, but is not widely distributed. I have seen it at Wick and at Sopley and also among the floating weeds at Knapp Mill, so it is evidently found in some of the smaller carriers near the Avon and washed out in floods. The pond near the Knapp Mill salmon-pass generally contains some.

Lemna minor, or lesser duckweed, is common everywhere.

Lemna polyrhiza and *L. gibba* are less common, but have been found at Bickton and the Christchurch meadows, and if specifically looked for would probably be found in many other places.

Lemna trisulca, the ivy-leaved duckweed, is relatively common, but as it does not float it is more easily overlooked. Very common in the Tarrant River, and easily found in many of the smaller streams.

Frog-bit is found in the area around Knapp Mill, but is not common.

Among the non-flowering plants a member of the Salviniacœ, viz. *Azolla filiculoides,* is found regularly in the stream at Stony Lane, Christchurch.

An interesting member of the Aquatic Hepaticæ—*Riccia fluitans,* has been found in a pond on the Ibsley Estate, and also at Ferndown.

Hippuris vulgaris (Mare's tail) is common in the deeper waters of the chalk streams, notably the Test and is very prolific on the R. Hamble at Bishops Waltham. Although occasionally found, it cannot be considered common in either the Avon or Stour.

Apium nodiflorum (Water celery) is probably the commonest water weed of this family. The flaccid underwater leaves form useful hiding places for nymphs and other fish food but the stiff flowering stems require cutting and may become a nuisance to fishermen. A somewhat similar plant, *Sium erectum* (Water parsnip) is quite common and in my opinion is found more profusely in the R. Frome. *Oenanthe phellandrium* (the fine leaved water dropwort) is the commonest member of this group in the R. Stour and is well distributed in the other rivers.

Nuphar lutea (Yellow water lily) is quite common, especially in the R. Stour.

Nymphae alba (White water lily) is more often found in lakes or slow running stretches and is not so common as the yellow water lily, but few are generally found above Throop Mill on the R. Stour.

Many marginal plants are common and well-known but hardly appropriate to be dealt with here, while the Rushes, Reed and Grasses, although important, are too complex to be dealt with as a mere addendum to a paper on river plants.

The study of water plants is a fascinating one. The difference between the under-water and aerial leaves is frequently noteworthy and the propagation by means of winter buds in some cases is full of interest. So many factors influence the growth of water plants that the absence or abundance of a species can rarely be related to a single factor and much further study is needed to elucidate the relations. Beyond showing the general tendency to revert to a climax of reed swamp, not much ecological work has been done on the water plants.

Obituary Notices

MAURICE ANDERSON AINSLIE, R.N., B.A., F.R.A.S.

Maurice Anderson Ainslie was born on October 4th, 1869, the son of Rev. A. C. Ainslie, Vicar of Corfe, Taunton, afterwards Archdeacon of Taunton. He was educated at Marlborough College and proceeded to Caius College, Cambridge, where he graduated in 1880 with distinction in Mathematics and Natural Science. He entered the Royal Navy Instructional Branch at the age of 25 and was attached to H.M.S. Britannia at Dartmouth, and later to the Royal Naval College at Greenwich. He saw service at sea with the Mediterranean, Channel and Cruiser Squadrons, and during the first World War was attached to the Admiralty and Royal Air Force as a technician. He retired from the Navy in 1922, but already had made a distinguished reputation for himself in Astronomy, Radio transmission and Microscopy.

He was President of the British Astronomical Association from 1928 to 1930.

During a brief residence in South Africa he was a highly esteemed broadcaster from Cape Town on Astronomical subjects, and on his return to England he lectured on many occasions under the auspices of the Oxford University Extension Lectures Scheme. He made the rare observation on February 9th, 1917, of the occultation of a star by the ring of Saturn, reported by only one other English astronomer, Mr. J. Knight, of Rye.

Captain Ainslie joined our Society in 1935 and for many years until his retirement through failing health was Chairman of the Astronomical Section. He was elected President of our Society in 1941. He was by no means a secluded astronomer, for his interests in classical music, the drama and most active outdoor sports remained undiminished from his Cambridge days. He died on January 20th, 1951, in his 82nd year.

WILLIAM MUNN RANKIN, M.Sc., B.Sc.

William Munn Rankin was a distinguished figure in educational circles, and during his residence in Bournemouth, was a valued member of our Society.

He was born at Skipton in 1878 and after attending the Grammar School there, proceeded to Leeds College and subsequently to the Victoria University of Manchester where he graduated B.Sc.

Munn Rankin was a keen botanist, and a competent chemist and geologist; in recognition of his valuable researches in plant ecology in the Pennines, he was awarded the honorary degree of M.Sc. by Leeds University.

In 1911 he came to Bournemouth as first principal of the new Technical College at the Lansdowne, and soon became an active member of the Natural Science Society. Elected Chairman of the Geological Section in 1914 he later became Deputy Chairman of Council, and in 1917 succeeded Sir Daniel Morris as Chairman of Council. In that year Munn Rankin became first Principal of the new Technical College established at Burnley in Lancashire.

Retiring in 1940, he settled at Whitchurch Canonicorum, where he found further opportunities for service to others; to within a few weeks of his death, he was lecturing on behalf of the Workers' Educational Association.

Our Society elected him an Honorary Member in 1920, an honour he greatly prized. He last visited us in March, 1950, when, despite failing health, he described his earlier botanical researches in the Pennines. He died in hospital at Lyme Regis on January 13th, 1951.

CHARLES EDWARD SCUDAMORE, B.A., L.R.C.P.

A familiar and respected figure was lost to our Society by the death of Dr. C. E. Scudamore at the advanced age of 92 years. An enthusiastic companion on our Field Days and a lecturer on great issues of present-day sociology up to within a few months of his death, he was known and loved by all. He had a gentle and friendly personality and few failed to come under its influence.

Charles Edward Scudamore was born in January, 1859 at Ditchingham, Norfolk, the younger son of the Rev. W. E. Scudamore, rector of that parish. He studied medicine at St. John's College, Cambridge, taking his B.A. degree in 1881, and at the London Hospital, qualifying in 1887. He then entered general practice in the north of London, where he remained until his retirement in 1920.

His funeral service at Bournemouth Unitarian Church was attended by a large gathering of friends.

WILLIAM CHARLES SIMMONS, B.Sc., A.R.C.S., F.G.S.

William Charles Simmons, President of our Society in 1942-43, was born at Southampton on 20th February, 1888. He received his early training at King Edward VI School in that town, and later at Shebbear College in North Devon. In 1907 he went to the Royal College of Science, London, where he gained the associateship of the college and graduated B.Sc. of the University of London with honours in geology.

In 1911, on joining the staff of the Geological Survey of Great Britain, he made a detailed survey of the Wirral Peninsula in Cheshire.

Simmons' main life-work lay, however, in tropical Africa, where his most notable scientific researches were those on the volcanic rocks of the Bufumbira region in South Western Uganda. He also kept regular seismic records and reported on an earthquake in the adjoining province of Kenya.

After twenty-two years' service in the tropics, Simmons returned to England and settled in Parkstone in 1936. He quickly became an enthusiastic member of our Society. Within a year of his election he became Curator of the Museum, and in 1940 was elected Deputy Chairman of Council. Two years later he became President.

Simmons had an extensive knowledge of the geology and natural features of the Purbeck Hills, but the illness which crippled him in his later years, handicapped his hopes of demonstrating to our members the fascinating problems this region presents to the geologist. His last address to the Society was a brief contribution to this subject in March 1951. He passed away peacefully in his sleep on June 10th, 1951.

SYDNEY RENODEN WYCHERLEY, F.R.M.S., F.L.S.

Sydney Renoden Wycherley was born at Cheltenham in 1879. Early in life he entered the employ of Spicer & Co., Paper Manufacturers, and eventually became Managing Director of their London factory. When his firm took an interest in Dufay Chromex Ltd., colour-film and scientific material manufacturers, he became Manager and Director. During the second World War he was adviser to the Government on colour photography and kindred matters. In 1946 he retired from active work, but remained a Consultant Director until 1948.

A man of exceptional ability, his wide interests included Religion, Art, Literature, and in Science, Astronomy, Microscopy and Photography. His chief love, perhaps, was Microscopy, for the practice of which he had a comprehensive array of instruments and a collection of 5,000 micro-slides, many of which he had himself prepared. These were always available to the Society and formed the basis of the Microscope Afternoons, which grew to be a feature in our programmes. He will be gratefully associated with the Society's successful annual Exhibitions, which he started, and carried through with great energy and devotion.

For five years up to his death, on December 20th, 1950, Mr. Wycherley was one of the most active members of the Society. Shortly after joining in 1946 he became Chairman of the Microscopical Section, in January 1949 Deputy Chairman of Council, and in March 1950 Chairman of Council.

Our Society has lost in Sydney Renoden Wycherley one of its most valued members; he laid foundations of work which will remain for its advancement and credit. He also added to his interests in Science a deep religious fervour, which found expression in outstanding services as a preacher for the Congregational denomination and Richmond Hill Church, Bournemouth.

Back Numbers of the Proceedings.

New members may not be aware that it is possible to obtain copies of most numbers of the Proceedings of the Society since 1908. There is also available an index to the Proceedings from 1903 to 1923 (price 1/-).

These back numbers contain much valuable material dealing with the archaeology, history and natural history of Hants and Dorset, and reference to the index is well worth while to all who are interested in these subjects.

Many of the articles and lectures are well illustrated, and some of them contain studies which are not available elsewhere.

The Secretary will be pleased to supply further information to any members desiring it.

BRITISH MUSEUM NATURAL HISTORY
PRESENTED
19 FEB 1952